ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF
THE ILLINOIS STATE MEDICAL SOCIETY

VOL. 76 OAK PARK, ILL., NOVEMBER, 1939 No. 5

Published monthly by the Illinois State Medical Society under the direction of the Publication Committee of the Council.

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Membership correspondence to Dr. Harold M. Camp, Monmouth, Ill.

Society proceedings and news items and changes in the mailing list to Dr. Henry G. Ohls, Managing Editor, 1618 Juneway Terrace, Chicago.

Subscription price of this JOURNAL to persons not members of the Illinois State Medical Society is $3.00 per year, in advance, postage prepaid, for the United States, Cuba, Porto Rico, Philippine Islands, Hawaiian Islands and Mexico. $4.00 per year for all foreign countries included in the postal union. Canada, $3.50. Single current copies, 50 cents.

Editorials

DOCTOR TOWNSEND SAYS:

Terry M. Townsend, M. D., President of the New York State Medical Society, says:

"State medicine, would destroy the right of the sick to pick their own doctors, and it would involve the building of a vast government bureaucracy, highly centralized and autocratic. The physician will be told what to do, he will not be allowed to decide whether he wishes to be a private doctor or a public doctor. He will at all events still be a private in another sense—a private in the rear rank. He will be regimented and marched in close formation or deployed at the command of men expert only in the specialty of public health, with little real experience in the treatment of sick persons. These officials would remain far from the front-line trenches in that sector of the war on disease which means hand-to-hand combat. They would be in their dugouts, well toward the rear, working on maps and charts, and from time to time issuing a terrific barrage of typewritten communiques claiming credit to themselves for every foot of territory gained by you and by me and by the rest of the 135,000 private practitioners of the country, who fight at the very front so close to the enemy that the grim visage of Death is always before us."

SHALL RHEUMATIC FEVER BE MADE REPORTABLE?

Reportability of a disease may be an inverse ratio to the merits of the sequalae involved in such reportability.

This would seem the case where rheumatic fever is concerned. Standing in a debatable zone, both as to origin and possible conquest, there is nothing of accepted record to prove that this actually violent malady with almost unescapable tragic consequences is either,

(a) infectious or contagious;

(b) moderately controllable by enforced prophylactic legislation as are measles, scarlet and many other fevers.

Discussion has arisen because the Chicago Board of Health has now made rheumatic fever reportable.

This ruling refers to that rheumatic fever which is an acute condition in children between the ages of three and seven and is in contradistinction to conditions in adults designated under the blanket term of "Rheumatism," varieties of which include arthritis, gout, neuralgia, neuritis, lumbago, cohrea, arthritis deformans and almost innumerable conditions of debatable origin and in this inclusion the National Health Survey states there were 6,850,000 cases of so-called rheumatism in the United States in 1937.

Health authorities and pediatricians generally accept the definition of rheumatic fever, as that outlined above for this acute condition in juveniles.

Since the ruling of reportability for rheumatic fever has been made, it will be of interest to find out whether that decision is in accordance with the recognized idea as to what diseases should be included in the category of reportability.

Statistics show that the incidence of rheumatic fever is diminishing. The following table shows deaths in Illinois from acute articular rheumatism between the years 1920-1938:

Year	All Deaths	Under 1 Yr.	1 Year	2 Years	3 Years	4 Years	5-9 Years	10 to 19 Yrs.	20 to 29 Yrs.	Over 30 Yrs.
1920....	254	..	1	4	6	3	33	50	26	131
1930....	246	6	4	2	2	7	27	51	27	124
*1938....	*121*	..	*2*	*1*	*3*	*1*	*16*	*34*	*19*	*45*

Above is a statistical table showing the number of deaths by age attributed to this condition in Illinois in 1920, 1930 and 1938. Deaths in 1938 were substantially lower than in either of the other two years, and only half as many fatalities among children of 10 years was attributed to rheumatic fever in 1938, as in 1920.

Commenting upon this problem, Reginald M. Atwater, M. D.,* Executive Secretary of the American Public Health Association, says:

"I have studied the reporting of rheumatic fever with some care. I am under the impression that nothing would be gained by such reports of cases."

"Citing Atwater* again, he says: "As a student of the epidemiology of rheumatic fever, I find means readily available through hospital and clinic records to estimate the prevalence and fatality rate. *I believe that the burden of compulsory reporting should be placed on physicians only when something constructive can be accomplished thereby. The uncertainties of diagnosis and the lack of effective control measures makes me confident that it would be futile to make rheumatic fever reportable now."*

That Atwater's idea has many followers may be learned when it is said that a thorough canvass of reporting practices by respective Boards of Health shows that Iowa is the only state requiring that rheumatic fever shall be put in the category of reportability. The reporting of arthritis is not required by any state in the Union.

In the *American Journal of Public Health,* Vol. 29, pages 701-8, for July, 1939, is published an address made April 22, 1939, before the Conference of State and Provincial Authorities of North America, at Washington, D. C., by Dr. Haven Emerson. He is ex-Commissioner of Health, New York City, but still a member of the Board of Health there. At Columbia University, Dr. Emerson is Professor of Public Health Administration, and he is chairman of the American Public Health Association Committee on the Control of Communicable Diseases. In this address Dr. Emerson discussed chickenpox, diphtheria, both amebic and bacillary dysentery, rubella, meningococcus meningitis, typhoid fever, measles, mumps, scarlet fever, poliomyelitis and pertussis. The article ends with this comment:

"The inconsistencies between reasonably exact experience or observation of incubation and communicable periods of these notifiable diseases and much of the regulation of the isolation and quarantine as implied or specified in the publications of state health authorities, and in the main obligatory upon the respective subordinate health jurisdictions of the states, appear to me to be so considerable in number and degree as to justify your attention. In spite of these evidences of somewhat irresponsible exercise of the powers of state health authorities, in this, the oldest field of preventive medicine—a field full of triumphs and general progress—the present status of communicable disease control is encouraging. Still greater success, with less annoyance to the patient, his family and the public can probably be achieved if administrative requirements and practice are brought more nearly into agreement with our knowledge of the natural history of these diseases.

"Among the multitude of obligations, which should be met by state health authorities in the traditional fields of their authorized functions, namely, to do their own work with approximate scientific accuracy, before they attempt the difficult and intricate functions of organized

care of general medical and surgical illnesses, are those which involve the control of communicable diseases.

"It seems to me that the best way to earn merit and the confidence and support of the public for essential health functions is to do the duties now required by law so well, that no reasonable criticism from the public or the medical profession can be brought against you.

"Rather than to encourage the exercise of persuasion and publicity and politics to have new functions and extensive new funds and duties added to you—for which in the main you lack essential exeperience and professional qualifications—I urge you to serve in the best possible way with your present resources those functions that no one else can carry on under the law—or is so well prepared for as you are."

Figures obtained from 24 hospitals show that the yearly hospital medical admission rate for rheumatic fever shows a progressively diminishing rate from latitude region 50-45 degrees to 34-29 degrees!

Other authorities commenting on rheumatic fever state: "Investigation proves that climatic conditions play a part in the causation and development of rheumatic fever. A questionnaire (A. Seegal and co-workers)[1] sent to representative groups of hospitals throughout North America, as to the number of cases of the disease, number of admissions and number of total admissions over a period of years permit the deduction that "The yearly admission rate (A. Seegal and co-workers)[2] for rheumatic fever in a selected series of hospitals in the United States and Canada is greater in northern than in southern regions of the continent. . . . Increasing evidence suggests that the hemolytic streptococcus plays an important role in the mechanism of the disease."

Further evidence is available (Coburn and Pauli)[3] ascribing etiologic significance to the hemolytic streptococcus in rheumatic fever, the variation in the geographic distribution of the disease based upon limited data presents a problem in specific host and bacterial interaction.

That streptococci may play an important role in the causation (Homer F. Swift)[4] of rheumatic fever has been the subject of discussion for many years, and recently the possible relationship of hemolytic streptococci has been especially stressed. This is a later finding than that (Wilson and her co-workers)[5] of a group of investigators that isolation of hemolytic streptococci from the throats of rheumatic and non-rheumatic children, and the occurrence of anti-streptolysins in their serums indicate no relationship at all between streptococcal infections and rheumatic fever.

In direct antithesis is the identification in the isolation of the streptococci (Coburn and Pauli)[6] of at least six different types belonging to Group A.

Dr. Lancefield[7] proved the existence of at least ten different serologic types belonging to Group A among strains isolated from their rheumatic patients. (Griffiths)[8] reports fifteen different types from rheumatic individuals identified by the slide agglutination technic. In all these cited works the same types were recovered from non-rheumatic patients with streptococcal infection and hence it would appear obvious that none of these strains carry any unique rheumatism inducing properties.

Much attention has been paid in recent years to the relationship (Swift)[9] between allergy and rheumatic fever. For example, the failure of the many discussed factors to explain completely and satisfactorily the pathogenesis of rheumatic fever has led many observers to the opinion that the disease is due to an undiscovered filtrable virus. In Germany, for years Gräff has actively advanced this point of view. Aschoff, Fahr and their followers show a tendency to agree with him, and in opposition to Klinge's allergic theory. One summary is that rheumatic fever presents protean manifestations, which, when few in number, often makes it difficult to distinguish the disease from closely related conditions, hence it is impossible to characterize the malady too accurately."

Still another authority (Shapiro)[10] insists that it has long been known that rheumatic fever is a markedly familial disease; that the discovery of the etiology will eventually explain the marked familial tendency; that 48.8% of a group of 201 who were examined developed rheumatic fever gradually with no preceding respiratory or throat infection. Over an experience of twelve years it is his impression that the majority of children who complain of leg pains are not suffering from rheumatism, and are in no danger of developing heart disease. As to the expectancy of recurrences in a total of 342 rheumatic children, exactly 178 or 52.1% suffered one attack only; 164 or 47.9% had recurrent attacks. Of these recurrent attacks 44 or 26.8% had recurrences at the end of the first year and a like number had recurrences at

the end of two years. Hence the conclusion that childhood rheumatism occurs most commonly between five and six years of age; the disease is definitely familial and this familial tendency is three times as great in a rheumatic group as in a non-rheumatic group, and the great majority of children who complain of leg-pains are not suffering from rheumatism.

As to these leg pains let quotation be made from Dr. William J. Ball in the *Journal of the South Carolina Medical Association* for July, 1939. The very mild nature of the joint manifestations in many instances has led to the confusion of this condition with the very common and so-called *growing pains,* occurring in childhood; either because of the belief that these pains are actually due to rheumatic fever or because of failure to differentiate them from true rheumatic pains. Children with such pains have been kept in bed for long periods, and even have been said, incorrectly, to have heart disease. Very recently (Hawksley)[11] in England, and (Shapiro)[12] in America have reported studies of relationship of these conditions with the conclusion that they are entirely independent, and have given definite criteria for such distinction.

Again we must mention (Dawson & Tyson)[13] the considerable controversy during the past century over the relationship of rheumatic fever and rheumatoid arthritis. Opinion was more or less divided into two schools—those who believed that here were separate and distinct diseases; and those who maintained that they were different expressions of the same fundamental process. *At present the majority of clinicians both in Europe and in this country consider these two clinical entities as distinct diseases having little or no relation to each other.*

It is well known that orthodox rheumatic fever exhibits a marked familial tendency, and that it is somewhat less generally appreciated that rheumatoid arthritis also shows a definite familial incidence; that rheumatic fever and rheumatoid arthritis tend to occur in the same family. This observation may be interpreted in a variety of ways, it assumes significance only in connection with other evidence of a relationship between the two diseases.

Since the incidence of rheumatic fever (Seegal & Seegal)[14] diminishes the farther south a survey is made until it becomes a relatively rare event in the tropics, the conclusion is that rheumatic fever is essentially a disease of the temperate zone. Further it is essentially a disease of childhood, and rheumatoid arthritis is predominately a disease of the adult. There is some evidence however that rheumatic fever and rheumatoid arthritis are intimately related and are possibly different manifestations of the same pathological process. A final understanding of the relationship between rheumatic fever and rheumatoid arthritis will be impossible to achieve until the etiology of both diseases has been definitely established.

The influence of geographic location in the clinical incidence (E. Sterling Nichol)[15] of rheumatic fever and rheumatic heart disease is emphasized by comparing the findings in southern Florida and in New England. During the past five years, the admission rate of rheumatic fever, rheumatic carditis, or chorea in a general hospital in Miami *was only one tenth of the rate of Boston during that same period.*

Reviewing the literature of the influence of the tonsils on rheumatic infection in children (Albert D. Kaiser)[16] and on the influence of tonsillectomy in rheumatic infections leaves one in doubt as to the exact relationship of the tonsils to rheumatic disease. There appears to be an agreement that infection of the tonsils frequently precedes one of the rheumatic manifestations. On the other hand, many children subject to attacks of tonsillitis do not develop evidences of rheumatic disease.

In a survey of 48,000 children, of whom 20,000 were tonsilectomized and 28,000 were not, it was found that rheumatic fever was considerably less often in the tonsilectomized group, but in this same group muscular rheumatism, or "growing poins" was reported only slightly less. While this set of statistics leaves a degree of uncertainty as to the value of the data it does indicate clearly that rheumatic disease does appear in tonsilectomized children, though it seems probable that in such children initial attacks of rheumatic infection are somewhat less likely developed.

In a scholarly article on "Rheumatic Fever. Incidence and Importance in United States of America," appearing in the *Quarterly Bulletin Health Organ, League of Nations,* Volume 5, pages 247 to 251 for June, 1936, Dr. Ralph Pemberton, chairman of the American Committee on Rheumatism, says in part:

"Although classified as a rheumatic disease because of the frequency of joint involvment, acute rheumatic fever is beginning to be regarded as essentially a disease of the heart, in so far as its most serious aspects are concerned. It is *apparently less frequent than it was thirty years ago.* According to Lambert the incidence rate apparently declined between the years 1906-19. In a study of 1,152 cases, Davis observed a decline in New York between 1897 and 1919. He concluded that in New York City, *wet weather was a definite factor in increasing the prevalence of such diseases.* Many observers believe that climatic conditions pay an important role. *In general, rheumatic fever, is a severer disease in cold regions than it is in tropical or sub-tropical countries.*

"In the United States the disease increases in frequency travelling northward from Florida into Massachusetts. In a study of 500 families made by Irvine-Jones, 32 percent. has multiple cases of the disease. In this series it was shown that even distant relatives manifested the disease in greater frequency than did members of non-rheumatic families. Girls are more easily attacked than boys; it is more common with blondes or with individuals with red hair and also where the father has been the subject of the attack. Brooks and O'Regan hold that the most frequent prodrome is an infection of the upper respiratory tract, and in 5,215 consecutive autopsies Davis and Weiss found rheumatic heart disease in 9 percent.

"Stroud, Goldsmith, Polk and Thorp affirm that there is a familial influence as high as that of tuberculosis. Italians and Hebrews are more susceptible than are children of Irish or of American parents, and out of 428 attacks of rheumatic fever, 61 percent. were between December and May."

"Abstracting still further from Pemberton we read that he feels that the full etiology of rheumatic fever is still in doubt, but that it appears to be related in some manner to infection. He quotes *Collis et al* and *Sheldon et al,* who believe that attacks and relapses occur only after infection with hemolytic streptococcus as outlined. Also the etiologic theory of Clark who suggests that rheumatic fever is not due to the streptococcus but rather to some protozoa or spirochete carried by the rat flea. *Still another school of thought asserts that an imbalance of physiology possibly involving the endocrine system, underlies the syndrome."*

In conclusion Pemberton states that in way of prevention, he feels that under "properly controlled conditions tonsillectomy is justified as a step in the direction of prevention; also that in general acute rheumatic fever remains about as serious a problem as it was twenty or twenty-five years ago, although by no means constituting the scourge presented by chronic arthritis."

The case for rheumatic fever is far from being a closed one. The obscure etiology is, however, undisputed.

In the *Nebraska State Medical Journal* for September 1939, Dr. Edward Thompson writes "Unfortunately the specific etiology of the disease is not clear. The clinical studies regarding so many of the important factors have been so well studied that the relationship of a 'virus' or 'Streptococcus' is not readily established in spite of many attempts to find the true etiology." He cites the incidence of rheumatic fever in an autopsy percentage in the following table in confirmation of the partiality of this disease to colder climates.

Peter Bent Brigham-Boston	Charity New Orleans	University Omaha
4.67%	.23%	4.27%

He adds that in the out patients Childrens Heart Clinic of Omaha that Henske found the cases of rheumatic heart disease, totalled only 3%, and that in the Childrens Memorial Hospital of Chicago, "rheumatic heart disease accounts for the occupancy of about one fifth of the beds."

Another voice from the south dealing with this question came from Carroll M. Pounders and James K. Gray when they wrote in volume 32 1939 of the *Southern Medical Journal* that the *"term rheumatism has been used loosely to include all sorts of ailments affecting the nerves, muscles and joints, and to include conditions of varied etiology such as arthritis deformans and septic arthritis as well as rheumatic fever. So the present discussion is limited to that definite disease entity that usually has its beginning during childhood and in which the joint involvement represents only one of several manifestations.* It is known now that the condition is a systemic disease that invades various tissues of the body but affects chiefly the heart, the joints and their surrounding structures, the nervous system and the subcutaneous tissues. Figures are difficult to secure but it is generaly estimated that this disease makes up from 3% to 7% of the medical diseases observed in children's hospitals. While the direct etiological agent is unknown as has been said, recent studies throw considerable doubt on the once prevalent idea that upper respiratory infections, more particularly sore throat and tonsillitis were more directly related to rheumatic infections. Many cases in fact, are seen in which tonsillectomy had been done long before the initial onset. What makes recognition of great importance is that statistics show that from 60% to 70% of these children have involvement of the heart and undoubtedly cardiac disease is the first manifestation in a certain per cent of them."

Another report (R. Ash)[17] is to the effect that

the course of rheumatic infection as observed in 445 children during the years from 1922-32 at the Childrens Hospital, that 93% were kept under observation for an average period of seven and one half years after the onset of the disease and at the end of that time 66% presented valvular heart disease!

Harking to the voice of British medical men on the disease it is noted that in the *Lancet*, vol. 2, page 411 for Aug. 24, 1935 K. Douglas Wilkinson says that in regard to the causative agent the bacteriological findings and various experiments with toxins and anti-bodies all point to streptococcic infection as the predisposing cause. It is certain the organism is not pyogenic; it is probable that it is non-hemolytic, and that it may be a saprophyte, harmless under normal conditions and that may become virulent under special and as yet imperfectly understood circumstances.

Four years later, in the *Lancet* for Feb. 25, 1939, J. Allison Glover writes that one attack affords no immunity, particularly in children, to progressively severe occurrences, and this is of paramount importance to the consideration of control. It is a specific infectious disease with the infectivity of low order.

Statistical table showing deaths in Illinois reproduced above reveals that there has been an encouraging decline in the disease in this state between the years 1920 and 1938.

The inference drawn from all the surveys tends to show that its etiology is still a mystery rather than a scientific formula. Also that the disease is decreasing and that there is no evidence that it is transmittable to others by direct contact or by carrier and as such in the minds of some there is doubt as to why the disease should have been placed on the reportable list. However the law in regard to reportable diseases is that diseases may be made reportable by statute or through the regulatory power delegated by statute to the State Department of Health, which may promulgate regulations under such delegated authority and when these have been published or posted in accordance with the law they have the power and effect of law.

Let it be repeated, study of research into rheumatic fever fails to set forth any definite cause as to why the disease should be put into the reportability category. It is as mysterious as the etiology of the malady itself.

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HORACE WELLS, DISCOVERER ANESTHESIA. NINETY-FIFTH ANNIVERSARY TRIBUTE

The public has recently witnessed two attempts[1, 2] to discredit the established reputation of Dr. Horace Wells, Dentist, of Hartford, Connecticut, as the discoverer of anesthesia. These garbled half truths and historical inaccuracies were previously considered and answered by earlier writers[3, 4, 5, 6, 7, 8] and more recently refuted in current periodical literature.[9, 10, 11, 12, 13, 14, 15, 16, 17] The occasion of the 95th anniversary of the discovery occurring on December 11, 1939, therefore, affords an opportunity to review briefly some of the highlights of the Wells career.

Horace Wells was born at Hartford, Windsor County, Vermont, on January 21, 1815. After a liberal education in select schools and academies, he started in 1834 the study of dentistry at Boston in the offices of established practitioners, this being the vogue at this time, preceding the inauguration of dental schools. During the next two years he prepared himself for his chosen profession and in 1836 finished his training. He

opened and conducted an office for a short time in Boston. Later that year, he moved to Hartford, Connecticut, where within a short period of time he firmly established himself as an outstanding and capable member of the profession. His first book,[18] was published in 1838 and gained for him the respect and admiration of his professional confreres. About 1840 Dr. Wells began experimenting with nitrous oxide gas as an anesthetic in surgical operations. Under his direction, John M. Riggs and William T. G. Morton were given dental training during 1841-43. Both men later acquired fame individually for their professional attainments. With Morton as a co-partner, he operated another office in 1843 at Boston to popularize one of his inventions for soldering teeth to dentures.

Witnessing an exhibition of "laughing gas" in Hartford at a public lecture given by Gardiner Q. Colton on December 10, 1844, he visualized its pertinent application to medical, dental and surgical operations for the relief of pain. He promptly arranged for a demonstration at his own office the following morning when one of his molars was removed painlessly by his partner, Riggs. Here on December 11, Horace Wells underwent the first extraction of a tooth under nitrous oxide gas, thus giving to suffering humanity the boon which it had long sought. On this unforgettable day, ninety-five years ago, anesthesia was conceived, demonstrated and proclaimed by Wells. Together with Riggs, he experimented with both nitrous oxide and ether, but on the advice of his associates, he preferred the former as more suitable for short dental operations. During the following month, he visited Boston in order to lay this innovation before the medical faculty there and thus permit his discovery to be "as free as the air we breathe." Unfortunately, due to excitement and the fact of having to perform the dual role of anesthetist and extractor, his demonstration was only partially successful. His patient did cry out, yet admitted afterwards that he felt no pain.[3, 4] Few of those medical students present on this occasion fully understood the manifestations of patients in this anesthetized state and therefore attempted to belittle Wells and his work. He returned soon after to his home in Hartford and except for brief periods during 1845 and 1846, when he found it necessary to relinquish his profession due to a chronic physical ailment, Wells continued, until his death in 1848, to administer the gas for surgical and dental operations. He never, as has so often been claimed, abandoned his favorite anesthetic or his profession.

Full recognition of his work came to his name from the Connecticut Legislature, the city, county and state medical and dental groups, the New York Medical Society, Boston Gynecological Society, American Medical and American Dental Associations, English Dental and Medical professions, Parisian Medical Society, Spanish Odontological Society, and International Dental Federation.[13, 15] Memorials have been commemorated in Paris, Chicago, Washington and Hartford.[15] Countless tributes have been recorded in literature during the past century.[15] He remains, despite assertions for other claimants, the recognized discoverer of anesthesia. This sentiment has been well expressed in an engrossed resolution received by his widow from his professional confreres of England in 1873, which declared: "The world is indebted to him (Wells) not only for the introduction of nitrous oxide as an anesthetic but for having given that impetus to the study of Anesthesia which has resulted in the introduction of ether, chloroform and other agents for affecting this object."[15]

Dr. Wells' published works included "A History of the Application of Nitrous Oxide Gas, Ether, and Other Vapors in Surgical Operations." (1847)

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RUSH MEDICAL COLLEGE TO BECOME GRADUATE MEDICAL SCHOOL

This announcement was made October 3rd by the President of the Chicago University as follows:

The University of Chicago has decided to terminate undergraduate medical education at Rush. The Board of Managers of Presbyterian has voted that the hospital remain in its present location on the west side of Chicago.

As a result of these decisions, the University will establish a program of graduate medical education at Rush. Committees will be appointed shortly to formulate plans for the graduate school, which it is hoped will be opened in the near future.

The graduate school, it is contemplated, will emphasize research in medical science, and provide training for graduates of medical schools in the various fields of specialization.

Undergraduate work will continue, however, at Rush for the next three years, through July, 1942, to provide completion of training for the class entering next autumn (1940). Undergraduate training also will continue at the south side medical school, and after 1942 will be offered there exclusively.

Decision to establish Rush as a center of graduate medical training terminates discussions as to the ultimate status of Rush which have been carried on intermittently since 1916. In that year the University approved plans for the south side school, which was opened in the autumn of 1927.

Rush Medical College, chartered in 1837 and in operation since 1842, was the pioneer medical school of the Middle West. Rush merged with the University in 1924 after twenty-six years of affiliation. It has established a distinguished reputation, particularly for the training of practitioners. Its staff, drawn from leading physicians in active practice, who give part time to instruction, has made many important contributions to research.

Hospital Will Remain

It also was made known that the Presbyterian hospital, which has been closely associated with Rush Medical College since 1842, when the college was founded, will remain in its present quarters at 1753 Congress street.

The staff of the Presbyterian hospital now forms the faculty of Rush Medical college. All are active in practice and are part time instructors. Because of this connection the future of the two institutions often has been considered as a unit, and it once was proposed that the hospital be moved to the university campus and kept in close touch with the medical school founded there in 1927.

Plan Is Given Up

This plan was dropped, however, largely because of the expense involved. Another consideration, important to the faculty, was that opportunities for clinical training of students would not be so great on the south side as in the present location, which is near the County hospital. Rush College alumni have opposed abandoning the college as a training place for undergraduates.

DOCTOR KNOX JOINS STAFF OF SOLDIERS' HOME

Dr. Thomas B. Knox, councillor of the Sixth District, Illinois State Medical Society member of the Adams County Medical Society and of the American Medical Association and a member of the American Legion has been appointed a member of the medical staff of the Sailors' and Soldiers' Home, located at Quincy, Illinois.

Doctor Knox is a widely known Quincy physician and was a member of the staff of the same institution thirty-four years ago, as a part time member of the surgical staff.

While Doctor Knox's duties will be somewhat similar to those he performed at the Soldiers' Home in 1905, they will be performed under different circumstances because of the great improvements that have been made in caring for

the sick and injured in the two model hospitals opened during the last few years.

Doctor Knox started to practice in Quincy in 1902 after his graduation and three years later was appointed to the Soldiers' Home staff as a part time surgeon under Captain William Sommerville when the appointment was made full time service, four and a half years later, Doctor Knox resigned because of his large private practice. Doctor Knox continued his practice until the outbreak of the World War. He enlisted in Quincy in the medical corps and left here on July 4, 1917, was stationed at Camp Dix, N. J., for a year, was made commanding officer of the 312th ambulance company which was a part of the 78th division when the outfit went overseas.

The company consisted of 123 men and 13 ambulances and served in the front line trenches during the war. Members saw services in all major battles, including the Saint Mihiel and Argonne drives. Doctor Knox was honorably discharged with the rank of major at Fort Sheridan, Ill., in September, 1919, when he returned to Quincy to resume general practice.

Notified By Bowen

Notified of the appointment by A. L. Bowen, director of the department of public welfare, Doctor Knox said his offices in the Majestic building will be closed. Later, Doctor and Mrs. Knox, who are now residing at Hotel Newcomb, will occupy an apartment at the home reserved for members of the medical staff.

ANY DELAY IN TREATMENT OF APPENDICITIS IS DANGEROUS

Death and serious illness from appendicitis increased notably during the past few years as compared to the more prosperous 1920's, and this unhappy state is due chiefly to fear of the cost when funds were low, according to the "Journal" of the American Medican Association. Directly or indirectly, lack of money for extra expenses due to illness, and fear of being away from work caused many people to "stall along" when they had pain around the stomach, the magazine pointed out.

The "Journal" said the public must be educated not to take any chances with appendicitis, since it can be controlled if caught in time. If the patient cannot spend the money, he must pocket his pride and seek treatment anyway, for a few hours' delay spells the difference between life and death.

One of the worst evils in postponement of treatment because of finances is the tendency of people to "dope" themselves, specially with laxatives, the most dangerous thing possible. This merely hastens the need for surgery.

According to Drs. F. R. Kelly and R. M. Watkins of Cleveland, records of the patients studied showed that those ill during the prosperous years were sick 3.8 days before operation; those ill during the depression years were sick 4.8 days before surgery—in many cases a fatal delay. Of those delaying operation during the boom period, 42 percent took laxatives and other self-medication; during the depression, 67 percent tried to treat themselves this way.

That delay is dangerous is shown by the following figures: Of the acute appendicitis cases for the group studied during the depression, 28 out of 190 were operated on less than 24 hours after the rupture of the appendix, with death rate of only 3.5 percent; of the 86 operated upon 48 hours after the rupture, 32 percent died.

Delay in having appendicitis properly treated because of poverty need never be a factor if a person carries a liberal disability insurance contract, paying his expenses and continuing his income, written by a sound organization. "Mutual Benefit" policyholders do not have to dose themselves and gamble with death because they "cannot afford to go to the doctor" if they have an acute pain in their abdomen.

YOUR FAMILY DOCTOR

In our country today the average citizen is still able to select a doctor in whom he has confidence, and who will feel that his duty to his patient is paramount to all other obligations. For some time our doctors have been concerned over the threat of socialized systems of medicine which would destroy individualism, inhibit initiative, and place the politician between the doctor and the sick who call on him for relief from suffering and the cure of disease. Today the quality of medical service in the United States is better than that available in any other large nation in the world. This record is the result of the application of the individual principle to medical practice and is the chief factor which distinguishes American medical practice from that in many other countries. Our doctors are concerned with giving more and better medical care to all the people. It is an obligation which they have never denied in the past, and which they will be proud to continue under the present system.—Petrolagar Laboratories, Inc.

The permanent basis of medicine is not its research, but its application, or practice. What I ask is not any decrease in medical research but that medical research and medical practice be recognized as distinct but equally important, equally skilled, equally valuable parts of medicine as a whole. I ask that we may recognize that a physician may be a great doctor without doing original and basic laboratory investigation; that such research belongs to the research investigator and practice to the practitioner. And most of all, I hope that we will go back to the training of medical students clinically by great clinicians to be great clinicians.—H. W. Haggard, M. D., Physiologist, Yale University.

MEDICAL ECONOMICS

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As headlined in the *Chicago Tribune* of October 24, 1939, "Supreme Court Gives New Deal Another Rebuff," the United States Supreme Court on October 23 refused to review the decision of Federal Judge James M. Proctor dismissing the antitrust indictment of four medical groups and twenty-one physicians on July 26, 1939. Judge Proctor dismissed the indictments on the ground that the practice of medicine is a profession and does not come under the Sherman Antitrust Act, which applies only to business and trades. The Department of Justice had filed an appeal with the Court of Appeals but sought to expedite action by asking the Supreme Court to pass on the case directly. This action was not opposed by the physicians indicted or the organization accused, all expressing confidence that the decision of the lower Court will be upheld. The appeal will now be heard in the Court of Appeals in Washington. From there it may be taken through regular channels to the Supreme Court, for a final decision. Of course the decision of the Supreme Court is encouraging, but it is in no way final and the medical profession should not lose sight of the fact that the Department of Justice will continue to push the suit and harass the medical profession. While there is practically nothing that the medical profession can do as individuals in this appeal, The American Medical Association, through its House of Delegates, has by unanimous consent decided to oppose the Department of Justice to the final court of appeal if necessary.

The position of the medical profession as individuals, is entirely different in regard to the Senate Bill 1620, so-called Health Bill of Senator Wagner. While to all intents and appearance it slumbers peacefully in Committee, while the Senators talk about the neutrality bill, its proponents are continuing to push it quietly in the many devious ways known only to politicians, so that it can be again pushed in the coming regular session of Congress beginning about the 20th of January next. An article from the pen of H. P. Saunders, M. D., Secretary of the Chicago Medical Society, appeared in the *Bulletin of the Chicago Medical Society* of October 21, 1939. It is most timely and well written and we hope to print it in this column immediately following this article, provided the necessary approval is obtained from him in sufficient time to make the arrangements before the deadline date. It is most encouraging to get new writers interested in this subject, for every man has a different manner of presentation of the subject. This article is most vigorous and stimulating. It should make many of its readers realize that they have a responsibility in this fight against socialization not only of the medical and dental profession, but of the entire framework of our government. In the September 18 issue of *The United States News* under the title "Unfinished Business of Congress" is an article on "Improving National Health." It is a good summary of the present status of the work in Congress up to this time. One paragraph states, "But the more controversial features of the program —medical care for those unable to obtain adequate professional service, construction of hospitals and compensation for temporary and permanent disability—have still to run the gauntlet of Congressional debate." This is encouraging in a paper of admitted reformative tendencies, for it tells us that there is still doubt in their minds as to whether the so-called health bill will pass. We must remember that S. B. 1620 is only one of the bills that have been presented on this subject, some more objectionable than 1620 and some less so. Senator Taft has intimated that he may have one to present in the event that none is presented by the medical profession. So the threat of legislation continues and each of us should do our share to convince our Senators and Representatives by able arguments, supported by facts that such legislation is neither necessary nor for the best interests of the people of the United States.

At the above referred to meeting of the Council, the work of the Maternal Welfare Committee of the Illinois State Medical Society during the current year was discussed. Attention was called to the meeting to be held at Springfield on November 5, 1939, where the activities of a similar Committee in a neighboring state is to be reported. It is to be hoped that there will have been a good attendance at this meeting which will have been held prior to the receipt of this issue of the ILLINOIS MEDICAL JOURNAL and that a definite program will have been decided on. The concensus of opinion at this meeting was that the work has rather slowed down due probably to lack of interest on the part of the medical profession at large and not on the work of the Committee. It seemed necessary to arouse new enthusiasm in the medical profession and a new plan of delivering the needed information to those most in need of it. Somehow it seemed that this latter had not been accomplished up to this time.

The Sub-committee of this Committee, appointed to study the subject of Voluntary Health Insurance Plan in the United States under the Chairmanship of Dr. Hartman of Macomb, will have a preliminary report of their work in the December issue of the ILLINOIS MEDICAL JOURNAL. They are now busily engaged in an appraisal of the Michigan plan. They hope to have a recommendation ready for the entire Committee's study early in the year, so that definite action can be taken at the annual meeting of the House of Delegates at Peoria next May.

Early in October the Champaign County Medical Society held a regular meeting. The subject under discussion was Medical Economics from the viewpoint of a general practitioner, legislative viewpoint, and the Public Health Service. The speaker on the last named subject was very pessimistic as to the future of the practice of medicine as an individual private business and suggested since radical changes would occur anyhow that the medical profession should join in the proposed plans and endeavor to cooperate with governmental agencies. This was quite a shock to the majority of the hearers, and one cannot help but wonder whether the opinions advanced and the advice given was personal or represented that of the Public Health high officials. If the latter surmise is correct, the amount of work needed on the part of the medical profession to successfully oppose such propaganda is greatly increased.

E. S. Hamilton, M. D.,
Chairman.

DO YOU WANT TO FIGHT?

With everyone reading and talking of war, the American medical profession has gone into a quiet siesta while its most powerful enemy of all time is girding its strength for another mass attack. The Wagner Act has not been defeated; Socialized Medicine is still knocking at our door. That knock will soon become more insistent and be followed by the demand to "open in the name of the law." The next Congress will surely reopen hearings on the Wagner Act or similar legislation, and its backers will have learned many things about our defenses from the previous attack. They have studied those defenses minutely and will concentrate on their weaknesses. We cannot afford to be lulled into a false feeling of security by the silence of the enemy. We must arouse from our lethargy and prepare our defenses for the next onslaught—even a far more tactical move would be for us to choose this time to launch a vigorous attack of our own!

What is to be our point of attack? What have we learned of the weaknesses of our enemies? Many weaknesses have been discovered. Many failures of Socialized Medicine have been recorded. The medical and allied professions should concentrate our attack on those weaknesses. Let the torch of publicity brighten the corners where those failures are being hidden away. *Education is our only hope!*

Dr. Nathan Van Etten, President-elect of the American Medical Association, in his acceptance speech to the House of Delegates said: "Yesterday you adopted a report defining your position in relation to the proposed Wagner Health Bill. It will have small value, however, unless the whole medical profession of the United States is educated fully to understand it. Every delegate must realize his official obligations as never before and carry home to every single practitioner in his state a full consciousness of the importance of this declaration of principles. That practitioner is potentially one of the most powerful persons in the democracy. If he can be made to see his duty to his country and educate his patients to a realization of the

dangers of centralized control of medical practice, your action of yesterday will be sustained. In the name of welfare, gentlemen of the House, the practice as you know it and as you hoped it would become is to be destroyed. The functions of the most highly educated group of professionals in the world are to be taken over by bureaus operated by adventurous amateurs. The time has come for the concerted action of every doctor in the United States."

Education of physicians is not enough! The Woman's Auxiliary, the Hospital Associations, the Druggists Associations, and Dental Societies and all other allied professions must be aroused to the fact that socialization of medicine also seals their doom. When they are made aware of this fact by proper education they will form some of our strongest divisions for attack. They in turn with their contacts with service clubs, social organizations, and personal contacts will be our greatest factor in informing the voters of this country that medical service cannot be adequately rendered by a regimented group of pen pushers and form filling clerks. It must be rendered by physicians. It must be rendered by physicians who can think for themselves. It must be rendered by physicians who have the independence to act for the best interest of the patient, unfettered by regulations issued by arm chair officials and distant departmental dictators.

The voters of this country must be advised of the dangers and weaknesses of Socialized Medicine. If we can fortify ourselves with the strength of this knowledge in the minds of the voters before those honeyed tones begin emanating from every radio in the land during the next political campaign, with campaign promises of free medical care including hospitalization, recuperation and remuneration for everyone who thinks he is ill, we have installed our forces in an impregnable fortress. Let the people know that under socialized medicine they are to be treated as numbers rather than patients. Let them know that free choice of physician and hospital is to be taken away from them. Let them know that the expense, which must be taken from tax money paid by them, will be in excess of twenty dollars per individual per year, and radio dials will spin so fast getting another station when a candidate dares broach this subject that the repair shops will be rushed with orders for new parts.

Now the next time that physician friend of yours buttonholes you in the doctor's room of the hospital or in the corner drug store and begins to bemoan the fact that it's time "they" do something about stopping this State Medicine, just ask him how many service clubs or local gatherings, or even individual voters he has enlightened on the subject. It is not time "they" do something, it's time you do something. *This is your fight. If you want to fight, get into it.*

W. P. Saunders.

Correspondence

HONOLULU FROM A MEDICAL AND OTHER VIEWPOINTS

Chicago, Ill.,
October 1, 1939.

To the Editor: Recently I had the privilege of participating in an unusual program of medical economics. For some time a friend of mine had been urging me to come to Honolulu to see a number of patients having various endocrine disorders. None of these were able to come to the States for diagnosis and treatment, nor to pay me for going there. But it was thought that if each paid a reasonable consultation fee, the aggregate would be sufficient compensation for the trip.

This principle might well be applied in smaller communities. Consultants have had the experience of going a considerable distance to see one patient. The consultant's expense in time and money was sufficient to embarrass the patient. But if the same consultant could have seen two or more patients he could have charged each less and still have received a more adequate fee himself.

As time was limited, it was decided to go by air. I left the Municipal Airport at 10:25 P. M., September 6, arriving in San Francisco the following morning at 10:30—two hours late, due to head winds. This part of the trip was very rough. After leaving Denver we flew at an altitude of 14,000 feet. The altitude and the roughness combined caused severe headache and nausea. Altitude is said to cause marked retardation of the mental processes. Whether or not this is true, I do not know, but certainly on the second morning my mental apparatus was oper-

ating at very slow speed and it required about twenty-four hours to recover my equanimity.

Because of storms at Guam the preceding trip, the regular weekly schedule was delayed one day. The Clippers do not fly in storms. We left Treasure Island at 5:40 P. M., September 7, on the China Clipper, which is one of the oldest and smallest clippers, weighing only 28 tons as against 42 tons, the weight of the newer California Clipper, and arrived in Honolulu the following morning at 8:30, crossing at an altitude of 10,000 feet.

The Public Health aspect is one of the most interesting features of the islands. The Health Department was organized by the medical society and is largely controlled by it. Only a man holding the degree of Doctor of Public Health can hold the office of Commissioner of Health, and he must have had five years residence on the island or have had ten years with the Army, Navy or Public Health Service, in addition to his other qualifications.

They have a very rigid set of laws relating to Public Health. Most babies are vaccinated against smallpox at the age of six months and vaccination is compulsory on entering school or kindergarten. Toxin antitoxin is administered at school age. There has been no diphtheria among children for ten or twelve years. The only outbreak occurred in adults and was a mild, milk-borne affair, which was quickly traced to the guilty dairy. The infected cows were slaughtered and the owner allowed no compensation as in every instance he was found to have violated some law relating to the dairy industry. Tuberculosis contacts are all regularly examined. Should one fail to report on time he is immediately in collision with the law and any public assistance as relief is withheld until he reports for examination.

The common cold is frequent and runs about the same course as in Illinois. Sinusitis and middle ear disease are common among the swimmers and that includes most of the younger people.

There is no malaria, at least on the Island of Oahu where Honolulu is located, although the Anopheles mosquito is present, as is also the yellow fever carrying Stegomyia. At present the health authorities are particularly on the lookout for mosquitoes arriving by plane. We were not allowed to disembark until after the Public Health officer had inspected the Clipper.

Years ago when plantation labor was imported in large numbers quarantine was a very simple matter. Honolulu was so far from all other ports that the sailing time of vessels exceeded the incubation period of infectious diseases. The Japs built the first fast boats that reduced this time and so could bring in passengers during the incubation period. However, no major epidemics occurred.

Every ton of freight coming into the island pays a tax of 1c toward a fund accumulating to fight possible epidemics. This fund is controlled by the Chamber of Commerce and now amounts to about $300,000. It has been touched only two or three times. Once it was used to purchase automobiles for the Public Health nurses.

There is no rabies and to guard against its importation all dogs on arrival are quarantined for four months. This costs the owner 35c per day so that any mut becomes a valuable or at least an expensive dog by the time he passes quarantine.

There are but few flies. When boats carrying copra arrive the town fills up with so-called copra flies but apparently they do not carry disease. They disappear within twenty-four hours after the boats leave.

There are no snakes on the island, but many mongooses, whose ancestors were imported years ago.

The medical men are a well-trained, high-grade lot of fellows, and I would advise against any man going over with the idea that he is going to spread a lot of light in darkened corners. Any speaker who visits the island had better be prepared to be on his toes at all times. A great many of the men located in Honolulu come from the Middle West and many of them had their training in Chicago.

Returning, the Clipper left Honolulu at 2:43 P. M., September 20, and arrived in San Francisco at 11:30 A. M., September 21, more than an hour late because of head winds. The United Air Lines plane left at 12:45 P. M. and arrived in Chicago at 5:00 A. M., Friday, September 22. This made about thirty-three hours elapsed time. Passage on the Clipper both to and from Honolulu was very smooth. As a matter of fact, one had to watch the clouds to be sure that he was moving at all. The one disagreeable feature was

the roar of the four motors. The lounge was not particularly well soundproofed, though in the sleeping quarters, which were farther away from the motors, the noice was reduced to the point where it did not prevent a peaceful sleep.

The navigation of these ships is something to command admiration. Leaving San Francisco they head for what is little more than a dot in the Pacific 2440 miles away and week after week they arrive exactly on the spot they are looking for. They are in contact with both San Francisco and Honolulu every few minutes during the entire flight and speak to most ships they meet or pass en route. Before boarding the plane, the crew, and the land officers, decide at what altitude the Clipper will cross, as they know the height at which the most favorable winds will be encountered. Seven different trails or routes are outlined between San Francisco and Honolulu and the one to be used for that flight is selected before the takeoff. The flight is divided into zones and a certain amount of time is allotted for crossing each of these. Finally, a prediction is made as to the amount of time that will be required for the flight. Enough fuel to last several hours longer than this predicted time is put into the tanks. In addition to regular communication with the stations on the island and the mainland, frequent observations are taken the same as by the navigation officers of a ship. Consequently the crew know at all times exactly where they are. The Clippers do not fly at night except between Honolulu and San Francisco.

The Clippers do not fly as fast as the land planes. I doubt whether at any time we exceeded a speed of 140 miles per hour and for several hours on the return trip our speed barely exceeded 100 miles per hour. The land planes regularly cruise at about 180 miles per hour, sometimes exceeding it with a tail wind or being delayed several miles per hour by head winds.

Making the same trip by rail and ship would have required approximately fourteen days. Making it by air, I was gone a total of fifteen days, a little better than thirteen of which were spent in Honolulu.

The Pan Pacific Surgical Conference convened while I was there. This was attended by a number of men from the Middle West: Dr. and Mrs. John A. Wolfer, Dr. and Mrs. Hoeltgen, Dr. and Mrs. David Maher of Chicago, Dr. and Mrs. Corboy of Valparaiso, Indiana, Dr. Leckrone of Rochester, Indiana, and Dr. and Mrs. Kimler of Garrett, Indiana. Dr. Leckrone went deep sea fishing shortly after his arrival and managed to land a 200 pound yellow fin tuna.

Their hospitality is a thing they delight in and apparently indulge to their heart's content. At any rate, the visitor is so well treated that he is left wide-eyed with astonishment. I can strongly recommend Honolulu as an ideal place for a vacation. While this trip was in no wise a vacation and I would have worked but little harder had I been in my own office, I still saw enough to convince me that it would be an ideal playground. James H. Hutton, M. D.

POST GRADUATE ASSEMBLY IN CHAMPAIGN

Doctors of the Seventh, Eighth and Eleventh Councilor Districts will sponsor a post graduate conference in Champaign, Illinois, on Thursday, December 7.

The meeting will open with a complimentary buffet luncheon at 12:00 o'clock noon.

The course will be conducted in the afternoon and evening, each speaker being limited to twenty-minutes. Papers will be followed by questions from the floor. There will be no scheduled formal discussion.

The program will begin at 1:00 o'clock and will recess at five o'clock for dinner. There will be seven subjects presented in the afternoon, as follows: The Fundamentals in the Use of Sulfanilamide and Its Allied Compounds in Infection; Recent Developments in the Treatment of Diabetes Mellitus; Cardiac Emergency and Their Treatment; The Emergency Treatment of Automobile Injuries; The Treatment of Athlete's Foot and Other Fungus Infections of the Skin; The Treatment of Common Ailments in Children; Physical Therapy.

Dinner will be served at 5:30 and will be followed by four talks on The Management of the Male and Female Climacteric; The Treatment of Head Injuries; Why, When and How to Immunize; The Treatment of Common Disorders of the Upper Respiratory Tract.

Doctors of the state are cordially invited to attend this conference for which there is no registration fee. This is the second in a series of postgraduate conferences given in cooperation with the Illinois State Medical Society.

EDUCATIONAL COMMITTEE

Report for August and September

AID TO COUNTY MEDICAL SOCIETIES:

3,267 notices mimeographed, addressed and sent to doctors announcing scientific programs presented in Perry, Whiteside, Effingham, Randolph, McLean, Bureau, Henry, Lee, LaSalle, Tri-County societies.

525 announcements of programs sent to newspapers giving publicity for LaSalle, Henry, Lee, McLean, Cass, Carroll, Bureau, Tri-County societies and North Shore Branch of the Chicago Medical Society and the Chicago Medical Society.

500 announcements about the Chicago Medical Society first public meeting.

MATERNAL WELFARE PROGRAMS:

150 notices sent for Rock Island County Medical Society announcing Clinical Conference on Maternal Welfare.

45 programs mimeographed for Clinical Conference on Obstetrics sponsored by Perry Memorial Hospital, Princeton.

30 Invitations sent for Clinical Obstetrical Conference at Princeton.

47 invitations sent for Maternal Welfare Program sponsored by Kewanee Physician's Club.

1,000 copies of Maternal Welfare Platform prepared for the State Maternal Welfare Committee and sent to all county Chairmen.

51 newspaper releases concerning Rock Island Clinical Obstetrical Conference.

NEWSPAPERS:

Press articles written and approved on the following topics: Heroes of Medicine in Warring Countries; November Days; Hunters and Rabbit Fever; Blood Transfusions; Saving Ourselves from Colds; Avoid Home Accidents; Mentally Handicapped Children; Time to Save Hearing; Winter Lunches for School Children; Early Colds.

952 articles sent to Illinois libraries.

912 articles sent to Illinois Hospitals.

6,881 articles sent to lay list which includes W.P.A. teachers, Home Advisers, Schools, Red Cross, Health Chairmen, etc.

1,250 booklets announcing services of Educational Committee sent to entire mailing list.

1,142 editorial style health articles sent to newspapers.

767 health columns sent to downstate newspapers.

107 health columns sent to Chicago newspapers.

SCIENTIFIC SERVICE COMMITTEE:

29 scientific programs were arranged for these two months.

2 Heart Clinics held.

The program of the Scientific Service Committee is developing all over the state and many counties have asked the Committee to arrange not one program, but weekly or monthly programs during the coming year. In the experience of the past twelve years, there have never been so many requests received from county societies. This is most encouraging.

A new, revised list of programs available to county medical societies is now being printed and will be distributed to county secretaries within a short time. The Committee feels that this comprehensive list of subjects and speakers will be invaluable to county society program chairmen.

The Scientific Service Committee in conjunction with the recently appointed special committee on Post Graduate Education has arranged a one day clinical conference which will be held on November 9th at Jacksonville. The program will consist of eight speakers and eight discussants—representing Chicago and downstate. Men attending the conference will be urged to participate in the general discussions. The program will begin at 9:30 in the morning and will continue until 9:30 in the evening.

This is the first of three or four such conferences which will be arranged for different sections of the state.

41 Scientific speakers have been scheduled for the month of October.

The Committee has asked county secretaries to send in schedules of meetings so that a column giving a list of coming meetings and speakers may be published monthly in the JOURNAL. The first such list appeared in the October JOURNAL. This should enable doctors of adjoining counties to know of special programs in which they may be interested.

SPEAKERS BUREAU:

20 doctors presented popular health talks to lay groups.

Conferences were held with the Chairmen of Public Health and Child Hygiene of the Illinois Federation of Women's Clubs and the Illinois Congress of Parents and Teachers.

A health institute was planned for one of the largest districts of the Federation. Six speakers from the Speakers Bureau of the Educational Committee will present the program.

Speakers were scheduled to address Farm Institutes and County Teachers Institutes.

MISCELLANEOUS:

The Committee has changed exhibits in the Marshall Field & Company Annex window every month. This is the third year that the Committee has presented these popular health displays. The manager of the building has commented most favorably on the exhibits, the subjects presented, and the interest aroused in people going through the lobby.

The Committee prepared an exhibit for the Illinois State Nurses Association meeting in Peoria.

The Committee assisted the Southern Illinois Medical Society in securing speakers for its meeting in Mount Vernon.

Help has been given to the Maternal Welfare Committee and every effort made to secure speakers, give publicity, secure slides, etc.

175 new package libraries on popular health subjects have been prepared for the use of Illinois physicians.

RADIO:

For the 13th consecutive year, the Educational Committee has been asked to give weekly health programs over station WGN. These begin Tuesday, October 24th at 2:45 P. M.

On November 2nd the Committee will begin a new series of programs on Tuesdays and Thursdays from 1:00 to 1:15 over station WHIP.

Beginning the first of November, the Committee will be responsible for SIX RADIO PROGRAMS A WEEK over stations

WJJD
WGN
WAAF
WGES
WHIP

A total of 90 minutes a week is being given to the Illinois State Medical Society by Chicago radio stations.

Some doctors question the good that these broadcasts do! It would seem that if WGN and these other stations are willing to give valuable time each week, year after year, to the Society for these health programs, they must feel that they are of value to the radio public.

During August and September a total of 27 programs were given.

The Committee is furnishing copies of its programs to a number of downstate counties for use over local stations by local doctors.

ILLINOIS EYE AND EAR INFIRMARY OFFERS COURSE IN OPHTHALMOLOGY

There are some twenty counties in the State of Illinois that are lacking the services of an Eye, Ear, Nose, or Throat physician. For their ophthalmic service, the inhabitants of those counties have to depend upon non-medical refractionists or upon their own general physicians who may, but probably have not had any special training in diseases of the eye or refraction. Ophthalmology is a highly specialized subject and today the consensus of opinion is that a minimum of two years training is required for the practice of that specialty. But with the background of his general medical training, a general practitioner can learn sufficient ophthalmology to care for the simpler conditions that may arise in the daily run of his practice. Such specialized training must needs be concentrated and simple. The physician must learn to recognize ordinary diseases of the eye and what may be done. Even more must he learn to recognize conditions that are beyond the possibilities of his care. In addition he must learn to care for the simple refractive needs of his patients.

There are but few places in this country where a man in general practice can obtain such ophthalmic training, quickly and inexpensively. Therefore it is most interesting to note the plan of the Illinois Eye and Ear Infirmary to provide short courses. It is even more interesting to find that those courses are limited to men doing general practice in the State of Illinois. And most interesting of all is the plan to limit the registrations to such general practitioners as are not within easy distance (25 miles) of established ophthalmologists in the State. Such a scheme of registration is perfectly logical for the proposed courses are not intended to train ophthalmologists, but to aid men in general practice where there are no available ophthalmologists, in the better care of the eyes of the people of Illinois.

MATERNAL WELFARE COMMITTEE

The regular quarterly meeting of the Maternal Welfare Committee was held at the Palmer House, Chicago, October 8, 1939. A new program was approved by all the members and copies will shortly be in the hands of all the local county chairmen and secretaries of county societies.

Illinois has now become one of the leaders in the movement to minimize maternal and early infant deaths. Several states who have not had a program are modeling theirs after the plan adopted by the State Committee.

The new program as adopted:

1. More emphasis should be placed on adequate prenatal care.
   a. Monthly visits up to the seventh month, then every two weeks-history-physical examination including pelvic measurements-urinalysis-blood pressure-Kahn-blood count including red, white and hemoglobin-weight and dietary instructions.
2. We recommend that each County Medical Society should appoint a Maternal and Child Welfare Committee whose duties should consist of:
   a. Investigate maternal, fetal and early infant deaths for constructive study in reducing mortality.
   b. Organize a speakers bureau for lay groups within the county and foster lay group education under medical supervision.
   c. To increase the number of programs on maternal welfare and pediatric subjects before local society and hospital groups.
   d. Encourage the educational program among nurses of the community by such means as moving pictures and special lectures.
   e. Encourage any improvement of local hospital facilities for better maternal care.
3. We suggest that the Chairman of the Maternal Welfare Committee be designated as the County Chairman and be responsible for the furthering of this program in his respective county.

Because of the importance of the efforts of the local County Chairman and to further explain the program, an invitation will shortly be issued to all members of the State organization to attend a luncheon in Springfield. It is hoped that in this manner enthusiasm will be developed and the men may then return to their

respective county societies and explain the aims of the State Medical Society and reasons for fostering this program, the first attempted by organized medicine in the state of Illinois.

The Ladies' Auxiliary of the State and County Societies will be presented with a copy of the program and with their assistance and cooperation the local Maternal Welfare Committees undoubtedly will receive valuable aid if they see fit to adopt the platform and make it a major issue.

T. B. Williamson, M. D., Chairman.
John F. Carey, M. D., Secretary.

WOMAN'S AUXILIARY ACTIVITIES

Briefs for 1939-1940.

Know Your Auxiliary.

Constitutions and By-Laws.

Purposes and Aims.

The State Program Committee under the able leadership of Mrs. C. Otis Smith have outlined a most instructive and entertaining program for the year. They also suggest the additional features of devoting ten minutes of each meeting to a review of the current magazine "Hygeia," and fifteen minutes to the study of subjects which are of mutual interest, to be followed by group discussions.

We can not stress too strongly the interest and support the Auxiliary members should give to Radio Broadcasts sponsored by the Medical Society. Time was when such talks were highly scientific, dry, and boresome but not so any more. The Committee responsible for these broadcasts have developed a technique of presenting the subjects in a most interesting manner and they now have at their disposal, doctors with much speaking talent. Invite your friends to listen also.

COUNTY NEWS

Sangamon County had an Acquaintance Day Luncheon, Sept. 11th, at Fisher's Inn with 25 members present. They also had a regular meeting on Sept. 25th at the home of Mrs. W. Morginson. Mrs. D. M. Sirca, president, discussed the objectives of the auxiliary. Report of National Convention, by Mrs. H. Otten, Review of Sept. issue of "Hygeia," Mrs. D. J. Lewis. Introduction of Round Table, Mrs. H. Otten, assisted by Mrs. O. Ehrhardt, who gave the pros and cons of "Socialized Medicine," and by Mrs. C. Mayes, who discussed "Compulsory and Voluntary Health Insurance."

Coles-Cumberland County, Mrs. L. A. Neal, Pres. Regular meeting Sept. 20th, at the Hotel U. S. Grant. Mrs. W. R. Rhodes of Toledo spoke on "The National and State Public Health Service."

Bureau County held their meeting Sept. 12th. Dinner at the hospital, business meeting at the home of Mrs. M. A. Nix, Mrs. M. E. Miltenberger, Pres., presiding.

Vermilion Couny. A po-luck dinner was enjoyed at the home of Mrs. A. R. Brandenberger on Sept. 5th. After the business session the president, Mrs. J. H. Williamson, introduced the guest speakers of the evening, Dr. Holland Williamson and Miss Henrietta Perlman, who spoke on "Maternity Mortality Rate."

Aux Plaines Branch to the Chicago Medical Society; Mrs. C. W. Stuart, Press and Publicity Chairman. Held their annual Bridge Luncheon at the Oak Park Country Club Sept. 22nd. Mrs. H. M. Leaf, President.

ILLINOIS PHYSICIANS ATTEND POST-GRADUATE COURSES IN OBSTETRICS AND PEDIATRICS

For the past three years the University of Illinois in cooperation with the State Department of Public Health has invited members of the faculties of Northwestern University, the University of Chicago, Rush Medical College, Loyola University, and the Cook County Postgraduate School to participate in giving short concentrated courses in obstetrics and pediatrics. These have been in the nature of a combination of lectures, dispensary work with patients, ward rounds, roundtable discussions, consultation hours, and many special demonstrations in the pediatric and obstetrical departments at the Research Hospital, and ward walks at Cook County Hospital. An effort was made to keep the work as informal as possible.

The courses were repeated eight times during July and August of 1937, again for eight periods in 1938, and four periods in 1939. Registration by out-of-Chicago doctors has been given priority during the three years, and this year only downstate physicians were accepted. To date 201 physicians have taken advantage of the opportunity offered. One hundred and thirty-three were residents outside of Chicago. Several physicians have repeated the courses two and even three times.

Following is a list of physicians attending the courses from each county:

Brown County
Dr. Sarah S. Webster, Mt. Sterling
Bureau County
Dr. Philip V. Hall, Princeton
Champaign County
Dr. H. N. Greaves, Champaign
Dr. D. V. Sutch, Champaign
Dr. Willard L. Veirs, Urbana
Clark County
Dr. H. C. Houser, Westfield
Cook County*
Dr. H. D. Meisenheimer, Arlington Heights
Dr. Ben E. Wagner, Riverside
*Chicago not listed
Crawford County
Dr. L. R. Illyes, Palestine
Dr. J. A. Ikemire, Palestine
Dr. L. B. Highsmith, Flat Rock
Dr. R. J. Taylor, Palestine
Dr. Marjorie Ikemire, Palestine
Cumberland County
Dr. N. J. Houghton, Greenup
Douglas County
Dr. J. H. Taylor, Villa Grove
Dr. P. A. Gannon, Pontiac
Logan County
Dr. W. W. Coleman, Lincoln
Dr. E. H. Cox, Mt. Pulaski
Dr. LeRoy Branon, Lincoln
Dr. R. L. Ijams, Atlanta
Macon County
Dr. A. L. Ennis, Maroa
Dr. W. D. Murfin, Decatur
Dr. V. R. Wilson, Decatur
Dr. Lee O. Frech, Decatur
Macoupin County
Dr. E. R. Hobson, Gillespie
Madison County
Dr. R. L. Holcombe, Marine
Dr. E. Wilson, Troy
Dr. W. J. Reuter, Bethalto
Dr. E. A. Rygh, Highland
Mason County
Dr. I. E. Dolph, Manito
Dr. W. H. Schuette, Mason City
Massac County
Dr. Garrett, Brookport
McHenry County
Dr. U. L. Sealey, Harvard
McLean County
Dr. J. Jenson, Saybrook

DuPage County
Dr. K. L. Fish, Roselle
Dr. F. D. Leahy, Elmhurst
Dr. Mathis, Elmhurst
Dr. A. B. Jones, Wheaton
Edgar County
Dr. C. P. Whalen, Hume
Effingham County
Dr. R. D. Martin, Dietrich
Fayette County
Dr. Glen Walker, Farina
Ford County
Dr. A. A. Absher, Sibley
Fulton County
Dr. E. E. Davis, Avon
Dr. F. D. Jacobs, Farmington
Gallatin County
Dr. E. W. Burroughs, Ridgway
Greene County
Dr. W. H. Garrison, White Hall
Dr. A. K. Baldwin, Carrollton
Grundy County
Dr. J. B. Larsen, Morris
Hancock County
Dr. E. L. Kingsbury, Nauvoo
Hardin County
Dr. Watson, Elizabethtown
Henry County
Dr. A. W. Wellstein, Geneseo
Jackson County
Dr. Andrew Esposito, Murphysboro
Dr. J. A. Weatherly, Murphysboro
Jasper County
Dr. R. S. Wishard, Wheeler
Jersey County
Dr. A. B. Goltz, Frafton
Kane County
Dr. E. J. Rossman, Aurora
Dr. S. Klein, Aurora
Dr. F. N. Maginnis, Aurora
Dr. I. G. Murphy, Aurora
Dr. Elwyn S. Shonyo, Elgin
Kankakee County
Dr. L. J. Wisner, Herscher
Dr. H. A. Hartman, Kankakee
Dr. R. V. Thomas, Manteno
Dr. S. W. Blagan, Aroma Park
Kendall County
Dr. A. E. Ritt, Yorkville
Knox County
Dr. W. W. Keene, Yates City
Dr. L. N. Tate, Galesburg
Dr. C. A. Ross, Galesburg
Lake County
Dr. J. A. Ross, Wauconda
Dr. C. J. Foley, Waukegan
Dr. Marion Cole - Schroeder, Barrington
Dr. Robert R. Jacks, Highwood
La Salle County
Dr. J. L. Rock, Oglesby
Dr. F. J. Maciejewski, La Salle
Dr. M. J. Rosenthal, La Salle
Lawrence County
Dr. R. F. Snider, St. Francisville
Dr. C. G. Stoll, Sumner
Lee County
Dr. L. M. Johnson, Arrowsmith
Menard County
Dr. T. V. Plews, Petersburg
Morgan County
Dr. F. A. Quenser, Jacksonville
Dr. Milton Glascoe, Jacksonville
Moultrie County
Dr. S. H. Ambrose, Lovington
Peoria County
Dr. O. C. Ives, Peoria
Dr. J. W. Dougherty, Chillicothe
Dr. Fred C. Endres, Peoria
Dr. S. L. Stevens, Dalton City
Perry County
Dr. J. W. Stevens, DuQuoin
Pulaski County
Dr. O. Caraker, Olmsted
Dr. Wallace, Mounds
Randolph County
Dr. I. D. Newmark, Chester
Dr. W. W. Fullerton, Steeleville
Rock Island County
Dr. H. H. Parsons, Moline
Dr. Leo Gamburg, Moline
Dr. J. H. Fowler, East Moline
Dr. A. D. West, Moline
St. Clair County
Dr. R. F. Culbertson, East St. Louis
Dr. H. D. Smith, East St. Louis
Dr. O. G. Schneidewind, New Athens
Saline County
Dr. J. J. Klein, Harrisburg
Sangamon County
Dr. R. S. Campbell, Springfield
Dr. O. E. Ehrhardt, Springfield
Dr. J. H. Hill, Mechanicsburg
Dr. Ruth Raattama, Springfield
Dr. Elizabeth B. Ball, Springfield
Dr. F. Bornstein, Rochester
Stark County
Dr. J. T. Wead, Wyoming
Vermilion County
Dr. V. L. Murphy, Georgetown
Whiteside County
Dr. R. H. Lester, Morrison
Dr. W. R. Mechtenberg, Morrison
White County
Dr. E. C. Giltner, Maunie
Will County
Dr. J. R. Finkle, Plainfield
Dr. J. W. Turner, Peotone
Dr. Carl J. Gustafson, Monee
Dr. Lena Stewart, Joliet
Williamson County
Dr. L. H. Green, Johnston City
Winnebago County
Dr. A. M. Swanson, Rockford
Dr. C. E. Klontz, Cherry Valley
Dr. C. E. Hanstron, Rockford
Dr. W. B. Fonvielle, Rockford
Dr. S. J. Wojcik, Paw Paw
Woodford County
Livingston County
Dr. E. P. Pearson, Eureka
Dr. G. T. Grout, Flanagan
Dr. A. H. Claycomb, Minonk
Dr. E. F. Joss, Dwight

Physicians desiring to reserve places for the 1940 session may do so now. Applications are considered in the order that they are received.

SYMPOSIUM ON NUTRITIONAL DEFICIENCY

Thorne Hall, Northwestern University Medical School
November 15, 1939

9:00 a. m. to 12:00 p. m.

Chairman—Dr. N. S. Davis, III.

1. Vitamin A Deficiency—Dr. Frederick T. Jung.

2. Vitamin D and Calcium Deficiency—Dr. Smith Freeman.

3. Vitamin K Deciency—Dr. Warren H. Cole.

4. Vitamin C Deficiency—Dr. Chester J. Farmer and Dr. Arthur F. Abt.

5. Pellagra and Polyneuritis in Alcohol Addicts—Dr. Don C. Sutton and Dr. John Ashworth.

6. Round Table Discussion—Dr. Tom D. Spies.

Luncheon—DeWitt Hotel, $0.50.

2:00 p.m. to 5:00 p.m.

Chairman—Dr. Chester J. Farmer.

1. Nutritional Deficiencies During Maturity and Old Age—Dr. N. S. Davis, III.

2. Nutritional Deficiencies During Pregnancy—Dr. Edward Allen.

3. Nutritional Deficiencies During Infancy and Childhood—Dr. Bengt Hamilton.

4. Anemia Due to Nutritional Deficiency—Dr. Howard L. Abt.

5. Nutritional Deficiencies and Their Relation to Surgery—Dr. Charles B. Puestow.

6. Normal Dietary Requirement—Dr. Clifford J. Barborka.

7. Commercial Vitamin Preparations—Dr. F. C. Bing.

6:30 P.M. Dinner—Chicago Women's Club, 72 E. 11th St., $1.50.

8:30 P.M. Vitamin B and Pellagra—Dr. Tom D. Spies, Cincinnati, Ohio.

AMERICAN BOARD OF OPHTHALMOLOGY WRITTEN EXAMINATION, March 2, 1940, in various cities throughout the country. THIS WILL BE THE ONLY WRITTEN EXAMINATON IN 1940.

All applications for this examination must be received before January 1, 1940. All applicants must pass satisfactory written examination before being admited to oral examination.

ORAL EXAMINATION: New York City, June 8 and 10. Fall examination to be announced later.

CASE REPORTS: Candidates planning to take June examination must file case reports before March 1.

For application blanks write *AT ONCE* to Dr. John Green, 6830 Waterman Ave., St. Louis, Mo.

SECOND ANNUAL "PAY-YOUR-DOCTOR WEEK"

"Pay-Your-Doctor Week," inaugurated last year by California Bank in Los Angeles on a purely local basis struck a responsive chord in other sections of the country with the result that the week of November 26 to December 2 of this year has been designated as national "Pay-Your-Doctor Week" with banks in all sections of the country sponsoring the movement.

The November issue of Banking, official journal of the American Bankers Association, carries an article outlining the idea and suggesting that one bank in each city in the country sponsor and publicize "Pay-Your-Doctor Week."

The article written by Rod Maclean, manager of the advertising and publicity department of California Bank, suggests newspaper advertisements, radio, outdoor advertising, street car cards and bank statement stuffers as means of publicizing the occasion. In addition, Mr. Maclean suggests that every one engaged in the profession of healing be notified in advance of the date and that a supply of reprints of the newspaper ads be made available for statement enclosures.

A year ago, California Bank recognized the fairly widespread tendency on the part of the public to regard doctor bills as obligations that can wait indefinitely or at least until after all other bills have been paid and inaugurated "Pay-Your,Doctor Week" in Los Angeles. Because the movement originated entirely outside of the profession the question of ethics was not involved and the idea found instant favor with the Los Angeles medical fraternity.

The success of the movement was thereafter publicized in several national banking and medical periodicals and California Bank became the recipient of a stream of inquiries from interested banks in all sections of the country. When it became apparent that 1939 "Pay-Your-Doctor Week" would be observed in a number of cities scattered throughout the country, the machinery for making it a national movement was set up by California Bank.

While the movement is not entirely altruistic on the part of sponsoring banks in that they offer to lend funds for the excellent purpose of paying bills, it does call attention in a striking manner to the plight of many a doctor who is on call twenty-four hours a day, but who is generally paid at the patient's convenience.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The written examination and review of case histories (Part I) for Group B candidates will be held in the various cities of the United States and Canada on Saturday, January 6, 1940, at 2 p. m. Formal notice of the place of examination will be sent each candidate several weeks in advance of the examination date. No candidate will be admitted to examination whose examination fee has not been paid at the Secretary's Office. Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held in June, 1940. Receipt of Group B applications for the current examination (January 6, 1940) closed October 4, 1939.

Candidates for *reexamination* in Part I (written paper and submission of case histories) must request such reexamination by writing the Secretary's Office not later than November 15, 1939. Candidates who are required to take reexaminations must do so before the expiration of three years from the date of their original examination.

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted by the entire Board, meeting in Atlantic City, N. J., on June 8, 9, 10 and 11, 1940, immediately prior to the annual meeting of the American Medical Association in New York City.

Application for admission to Group A, Part II examinations must be on file in the Secretary's Office not later than March 15, 1940.

After January 1, 1942, there will be only one classification of candidates, and all will be required to take the Part I and Part II examinations.

For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

UNITED STATES CIVIL SERVICE EXAMINATION

Junior graduate nurse, $1,620 a year.

U. S. Public Health Service, Federal Security Agency, and Veterans Administration.

Applications must be filed with the United States Civil Service Commission at Washington, D. C.

Because of the demand for qualified eligibles, applications will be accepted continuously until further notice.

Persons whose applications are accepted will be notified when to appear for the assembled written examination, which will be given at approximately 3-month intervals.

A second application will not be accepted from any applicant within 3 months of the filing of the first application, nor from any applicant who has already attained eligibility in this examination.

The United States Civil Service Commission announces an open competitive examination for the position named above, to be held at any of the places listed hereon. Vacancies in this position in the field, and in positions requiring similar qualifications, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

The salary named above is subject to a deduction of 3½ percent toward a retirement annuity, and, in addition, the Veterans' Administration makes a deduction from the above-named salary not to exceed $480 a year for quarters and subsistence, and the United States Public Health Service a deduction of $690 a year, for quarters, subsistence, and laundry, when furnished.

Employment lists.—Permanent employees in the classified service will, upon earning a passing mark in this examination, have their names placed upon a separate list of eligible Government employees, which list may

be certified separately to fill appropriate vacancies in accordance with the civil service rules.

Duties.—Under immediate nursing supervision, to perform general nursing duty in the wards of hospitals, infirmaries, or sanatoria; and to perform related duties as assigned.

Basis of ratings.—Competitors will be rated on practical questions on a scale of 100.

Time required.—About 3½ hours will be required for this examination.

Statement concerning qualifications will be verified by the Commission; exaggeration or misstatement will be cause for disqualification.

Applications forms.—The necessary forms may be obtained from the Secretary, Board of United States Civil Service Examiners, at any first-class post office (including the places listed hereon), from the United States Civil Service Commission, Washington, D. C., or from the United States Civil Service district office at any of the cities given below (the title of the examination desired should be stated):

Atlanta, Ga., New Post Office Building.
Boston, Mass., Post Office and Courthouse Building.
Chicago, Ill., New Post Office Building.
Cincinnati, Ohio, U. S. Post Office and Courthouse.
Denver, Colo., Post Office Building.
New Orleans, La., Customhouse.
New York, N. Y., Federal Building, Christopher St.
Philadelphia, Pa., Tenth Floor, Gimbel Building.
Seattle, Wash., Federal Office Building.
St. Louis, Mo., New Federal Building.
St. Paul, Minn., U. S. Post Office and Customhouse.
San Francisco, Calif., Federal Office Building.
Honolulu, T. H., Federal Building.
Balboa Heights, Canal Zone, Secretary, Board of United States Civil Service Examiners.
San Juan, P. R., Chairman, Puerto Rican Civil Service Commission.

The exact title of the examination, as given at the head of this announcement, should be stated in the application form.

Issued October 9, 1939.

RECTAL AREA CANCERS MAY BE SECONDARY

All malignant growths of the rectal area should be minutely examined to ascertain whether they are secondary or primary cancers, inasmuch as such conditions may have their origin in other parts of the body, Harry E. Bacon, M. D., Philadelphia, advises in *The Journal of the American Medical Association.*

Reporting seventeen cases of cancer of the breast or of organs in the abdominal cavity in which the first symptoms were those caused by malignant growths of the rectal area, Doctor Bacon points out that: 'whereas in this series the disease was advanced, it must be realized that such secondary invasion may occur early and be the only extension. The condition is of importance in that it is not extremely rare, the symptoms may not direct attention to the primary growth and the extrarectal process may be incorrectly diagnosed. As a routine procedure careful palpation and visualization of the rectum in every case of suspected malignant growth are advocated."

SYNTHETIC HORMONE IS MADE AVAILABLE

St. Louis.—The new synthetic adrenol cortex hormone, life-saving remedy for Addison's disease, made by the Swiss chemist, Dr. T. Reichstein, was to be available commercially the first of June, Dr. George W. Thorn of Johns Hopkins Hospital announced here. Tests of this synthetic hormone on animals and patients which show that the synthetic chemical can substitute successfully for the chemical made by the patient's own gland have been made by Dr. Thorn and Drs. R. Palmer Howard, Kendall Emerson, Jr., and Warfield M. Firor of the Johns Hopkins Hospital and Medical School.

The Hopkins doctors have been giving the synthetic hormone in oil preparations by hypodermic injection and also have given it by burying pills of the hormone crystals under the patient's skin. By this latter method the patient can be given an eight-months' supply of hormone at one operation, instead of having to have daily injections.

Fifteen very sick patients who were given the new product are now well enough to be back at work. Before giving the patient his long-term supply of the hormone in the pills, the amount he will need must first be calculated, Dr. Thorn said, by giving the oil preparation by injections. Even after he is carrying the pills around in his body, he must be watched because if he gets any germ ailment, he will need more hormone which must be given by injection.

WHAT ABOUT COMPULSORY HEALTH INSURANCE?

Do you want it? Do physicians want it? Who are the proponents, and what do they expect to gain? The medical profession is opposed to it for the following reasons:

1. You can not choose your own physician.
2. You will lose the intimate relationship between yourself, four family, and your family physician.
3. It will reduce the present high character of medical service.
4. It will not supply preventive medicine.
5. It will cause a sharp rise in your tax rate.
6. It will not reduce the cost of medical care.
7. It will not improve the quality of medical care.
8. It will not reduce mortality, or prolong life.
9. It will not favorably effect the occurrence of disease.
10. It will not take care of the pauper population.
11. It will not provide greater economic security to those needing it.
12. It will not be a good thing for society.
13. It has never produced the promised, or expected results in any country in which it has been adopted.

—*Weekly Roster Medical Digest.*

Original Articles

DIAGNOSIS IN THE ACUTE PNEUMONIAS

COURTNEY N. HAMLIN, M. D.
ROCKFORD, ILLINOIS

In the present day management of the acute pneumonias it is now generally recognized that early and accurate diagnosis is extremely important. Prognosis in the individual case is improved when specific therapy can be applied early. In order to make early diagnosis the physician must have the disease in mind, and must be able to elicit, and properly interpret early findings.

Since 1928 Cole, Reimann,[1] and other prominent workers in pneumonia have been discussing this disease in terms of typical and atpyical pneumonia. The typical pneumonia is one characterized by sudden onset with chills, fever, cough, pain in the side and the expectoration of rusty sputum. There is observed on examination, cyanosis, rapid shallow breathing, dullness over a portion of the lung fields and rales. This is of course the classic lobar pneumonia. The term atypical pneumonia is used for all forms of pneumonia which differ clinically from lobar pneumonia. This is a simple, practical and descriptive classification for the clinician. When seeing a case early the physician doesn't know whether or not the area of pneumonia found by physical examination and x-ray will remain a bronchopneumonia or will develop into a lobar pneumonia. Furthermore, he hopes to isolate the exact bacteriological cause and, with our now very effective therapy for pneumonia, arrest the disease before the usual pneumonic consolidation has occurred. Thus in handling early cases the clinician is more apt to disregard the terms lobar and bronchopneumonia, and think rather in terms of typical and atypical pneumonia, qualifying these terms further by an exact bacteriological diagnosis.

The classic lobar or typical pneumonia usually offers no difficulty as far as clinical diagnosis is concerned. The atypical pneumonias on the other hand may present numerous diagnostic problems. The diagnosis here is often obscured because of its gradual onset during the course of an upper respiratory infection. Again the onset may be sudden and exaggerated, with symptoms such as meningismus and delirium predominating. The pneumonia may develop gradually during the course of a chronic illness such as congestive heart failure, undulant fever, delirium tremens, pernicious anaemia and others. In these cases the original disease often masks the onset of a pneumonia. Cecil[2] found at Bellevue Hospital that 32.6% of his cases of pneumonia occurred in this manner. Finally, pneumonia may have a silent onset without symptoms pointing to the lungs. It must be remembered that pneumonia in elderly and debilitated people may be almost afebrile. McCann[3] notes that the chill which is emphasized in text books is present in about two-thirds of the cases, missing in the rest. Pneumonia may develop without pain in the chest, without cough or without expectoration. In these cases rapid respiration, and particularly when combined with cyanosis, is an important clue to diagnosis. The normal ratio of pulse rate to respiration is about 4.1. When this ratio is changed to 3.1 or 2.1 the physician should strongly suspect pneumonia. This is one of the most constant initial signs. Dilatation of the alae nasae, the expiratory grunt in association with rapid shallow breathing, and a coughing of rusty sputum are important early findings.

Signs of consolidation are almost never present at the onset and may not be present in characteristic form for twenty-four or forty-eight hours. This is particularly true when the physician is dealing with a so-called central pneumonia, that is, one in which the consolidation begins around the hilus region and gradually spreads peripherally.

On physical examination the earliest sign of consolidation may be suppression of breath sounds over a portion of a lung field. The next finding may be fine crepitant rales heard best at the end of inspiration, presumably when the alvealor walls held together by sticky exudate, are pulled apart. There may be limitation of respiratory excursion on the involved side, with a compensatory increased motion on the sound side. Variations in expansion can often be detected better by palpation than by inspection. As consolidation progresses rales are heard close to the ear, becoming coarse in character. They may disappear, while the breath sounds become bronchial in character. As consolidation progresses further, whispered and spoken voice sounds are transmitted

Read before Section on Medicine, Illinois State Medical Society, Rockford, May 3, 1939.

easily and with increased volume. Pleural friction rubs may be heard.

Upper lobe pneumonias in adults sometimes present diagnostic problems. In an analysis of 180 pneumonia cases Rosenblatt[4] found primary upper lobe pneumonia occurring in 14% of the cases. McCordick and Warr in another series found an incidence of 26 and 10% respectively. These cases may be diagnostic problems for several reasons. First, they are often confused with pulmonary tuberculosis. Secondly, there is a tendency for the onset of symptoms to be characterized by delirium and meningismus which favors a diagnosis of meningitis. Thirdly, these patients often present no chest findings of pneumonia on physical examination. In five of his twenty-four cases, Rosenblatt found that the symptoms were typical of pneumonia but there were no chest signs. Diagnosis would have been missed had it not been for routine roentgen findings.

Roentgen films in cases of typical pneumonia usually contribute very little to the diagnosis. In cases of atypical pneumonia, or in those instances where the physician suspects the disease but cannot confirm it by physical examination, the roentgen film of the chest is most useful. Since this phase of diagnosis is to be discussed in another paper I shall not elaborate further.

Blood counts, although of no specific value in diagnosis, do have some general value. The leukocytes are almost constantly increased. The average count is about 25,000 per cubic millimeter. It is generally true that an increasing number of leukocytes or a high white blood count are of good prognostic import. A diminishing or low white blood count indicates either a very mild infection or lowered resistance on the part of the patient. The differential blood count will show a relative increase in filamented and non-filamented leukocytes during the height of an acute pneumonic infection. As the infection subsides, the number of non-filamented forms decrease and the monocytes increase. With recovery, the filamented leukocytes decrease as do the monocytes.

For a number of years it has been recognized that the acute pneumonias could be caused by a variety of micro-organisms. Most of these pneumonias are caused by the pneumococcus. Bullowa[5] in 1937 found the pneumococcus to be the offender in about 85% of his cases. More recently Cecil[6] in an analysis of 560 private pneumonia cases found that the pneumococcus was the cause of the disease in 94.8% of his cases. The next most common organisms causing the pneumonias were, in relative order of frequency, the streptococcus hemolyticus, streptococcus viridans, bacillus influenza, staphylococcus aureus, staphylococcus albus and Freilander bacillus. It must be remembered that the tubercle bacillus is capable of producing an acute pneumonia which at the onset may be indistinguishable clinically from the other varieties.

Previous to 1929, Dochez and Avery had separated the pneumococci into four types. Between 1929 and 1932, Georgia Cooper identified thirty-two different types of pneumococci. This bacteriological study has had a revolutionary effect on the diagnosis and treatment of pneumonia. Today, bacteriological study is as important to the physician handling a case of pneumonia as biopsy is to the physician in the management of malignancy.

In order to arrive at an exact bacteriological diagnosis a number of procedures are usually employed. The first step should be to obtain some sputum from the pneumonia patient. Needless to say this should be material that has been coughed up from the bronchi. In the event the patient is unable to raise sputum two other procedures may be used. A sterile cotton swab may be applied to the posterior pharynx, and this swab is then incubated in a special media known as Avery's broth for about four to six hours. At the end of this time pneumococci may be found in the broth and typing can be done with these recently grown organisms. Another procedure is to do a lung puncture. A sterile syringe with a long needle is used. An area of skin between two ribs and over the consolidated lung lobe is chosen and infiltrated with novocaine. A quick jab is made into the consolidated lung with a long needle, at the same time applying suction on the syringe. By this means some so-called lung juice may be obtained for bacteriological study. Up to 1938 Bullowa[7] had used this method on 2,500 patients at the Harlem Hospital in New York City. The risk of such a procedure is very slight.

When proper sputum is present the bacteriological study is much easier. The first step should be to smear some sputum on two glass slides. One slide should be stained by the Zeil Neilsen method for tubercle bacilli and the other

should have Gram's stain. The Gram stain should show whether or not any pneumococci are present and may indicate in a general way, the predominating type of organism whether it be the pneumococcus, streptococcus, staphylococcus, or others. The sputum should then be typed by the Neufeld method. This is done by placing a small drop of sputum on a clean glass slide. A drop of rabbit testing serum in mixed with the sputum and a small drop of methylene blue may be added for stain. If the pneumococci are of the type corresponding to the rabbit testing serum used the capsule of the pneumococcus will become markedly swollen. If the pneumococci are of a different type no swelling of the capsule will occur. In order to facilitate typing through all of the thirty-two pneumococcic types the diagnostic rabbit serums have been grouped as shown on the following slide. The laboratory worker first tests by these individual groups. If a positive Neufeld test is obtained for one of the groups then each individual member of that group is used in typing the organism. If very few pneumococci are found in the original stained sputum smear a portion of the sputum specimen may be emulsified with saline and centrifuged. Bacteria collect in the supernated fluid and this method may provide more organisms for study. This method has recently been described by Taplin[8] in the journal of the American Medical Association.

It is usually best to check sputum typing by other bacteriological methods. A sputum culture can be done very easily by plating a small amount of it on blood agar. There should be good growth in 24 hours. This is of particular value in demonstrating the predominating organism. Pneumococci grown on blood agar can also be typed by the Neufeld method. Oftentimes for further check a small amount of sputum is injected intraperitoneally into a mouse. The peritoneal cavity of a mouse is a selective culture medium for pneumococci. These organisms will grow there to the exclusion of others. In twenty-four hours pneumococci, if present, may be typed from the peritoneal exudate.

Blood cultures are extremely valuable aids to diagnosis at times. This is true for several reasons. First, a positive blood culture may confirm or disapprove the original sputum typing. If the blood culture differs from the original sputum type found, the organism in the blood culture should be considered the one most likely the cause of the pneumonia. It must be remembered, however, that more than one type of pneumococcus may be causing the pneumonia. McCann[9] in a recent publication calls attention to this fact. He points out that with the invasion of a new lobe, one lobe already being consolidated, the temperature may suddenly drop and the patient may show all signs of shock. The temperature again rises in a short time. With this evidence of the invasion of a new lung lobe the sputum should be retyped. Autopsy has revealed different types of pneumococci causing pneumonia in adjacent lung lobes. The blood culture also has considerable prognostic value. Any carefully controlled series will show more deaths among those patients with positive blood cultures than among those with negative ones. Cecil[10] in analyzing 287 cases of pneumococcic pneumonias found a mortality of 74% among those having positive cultures as contrasted with the mortality of only 16% among those with negative blood cultures. Individuals developing bacteriemia seem more prone to develop complications. In a series of 1,125 Type 1 pneumococcic cases, Finland[11] found 21 cases of empyema. Seventeen of these cases had positive blood cultures.

Bacteriological studies on pneumonia cases has revealed a number of peculiarities as regards the different organisms. Types 1, 3, 2, 8, 5, 7, in that order, are the most common pneumococcic types found in most communities. In the city of Rockford there have been about 175 sputum typings done since December 1st, 1938. The most prevalent types in this small series were found to be in relative order of frequency: Types 3, 1, 2, 7, 16, 4, 6, 19 and 8.

Types 1 and 2 pneumococci are almost never found in the respiratory tract of normal individuals. Some of the higher types may normally be present. Gundel[12] found pneumococci types 18, 6, 3 and 4 predominating in the throats of 1,500 healthy individuals. Cecil,[13] in his 560 private pneumonia patients, found that pneucococcic types 1, 2 and 3 almost always produced typical pneumonia with classic history, frank physical signs and rusty sputum. Type 3 pneumococcic pneumonias are notoriously severe and usually carry the greatest mortality regardless of treatment. Since this organism is frequently found in so-called normal throats and

since it possesses the characteristics of being readily invasive of the blood stream, Type 3 pneumonias are prone to occur in people debilitated by other disease. Thus, a large part of the problem as regards Type 3 may be due to the fact that this pneumococcus gains a foothold just when the patient's resistance is at its lowest ebb. Cecil also found that higher pneumococcic types were prone to produce atypical pneumonia cases. He further found that streptocccic pneumonias and staphylococcic pneumonias were seriously ill but with indefinite chest findings. Bulowa,[14] in a seven-year study of all the pneumonias at the Harlem Hospital found Types 2, 3, 14 and 19 pneumococci to be the most liable to produce bacteremia. These four types consequently produced the greatest mortality.

In a number of instances pneumonia will be encountered where bacteriological study of the lung secretion fails to reveal any organism thought to be the causative agent. This situation will exist where the physician is dealing with an influenzal pneumonia. There has been considerable discussion in the past about the cause of influenza but it is now generally agreed to be due to a filterable virus. Special technique and equipment are required for growing the influenzal virus so that bacteriological study is impossible except in a few exceptionally equipped centers. Influenzal pneumonia is almost always of the atypical type.

Reimann[15] has recently reported seven cases of atypical pneumonia, which after careful study, show a virus infection not related to the influenzal virus. The pneumonia following measles is most likely due to a virus. The situation as regards virus pneumonia is particularly complicated at present because of the fact that it is hard to evaluate the role of the ordinary secondary invaders such as streptococci, staphylococci and others.

SUMMARY AND CONCLUSION

1. Whereas, typical pneumonias are usually easily diagnosed clinically, atypical pneumonias have many variations and are often diagnostic problems.

2. Bacteriological diagnosis is extremely important in the present day management of the pneumonias.

3. A few characteristics of the causative organisms in pneumonia have been pointed out.

4. There is still much to be learned about the true nature of the pneumonias following virus infections.

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GENERAL MANAGEMENT OF PNEUMONIA

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Pneumonia is recognized as one of the great medical emergencies with a high mortality. A reduction of this mortality is being brought about by its earlier recognition and the prompt application of specific serum, chemotherapy and alert physiologic support of the patient. My part of this symposium is limited to remarks on the general medical management of pneumonia as it is understood today. Since thirty per cent. of pneumonia cases cannot be typed for specific serum therapy and because of the streptococcus, the Friedlander and influenzal varieties, general medical features of nursing care, rest, food, fluids, oxygen and cardiovascular support con-

Read before Section on Medicine, Illinois State Medical Society, Rockford, May 3, 1939.

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tinue to be the fundamentals of the treatment of all pneumonias.

HOSPITALIZATION

All features of medical management are facilitated by moving the patient to a hospital whenever pneumonia is suspected or diagnosed. Whenever the onset has the so-called typical features of chill, pain in the chest, and cough with bloody sputum, the diagnosis is readily made, so that sputum typing and specific measures may be promptly carried out. However, a large number of patients have an insidious onset in that they have been suffering from a cold which has merely "grown worse." In these cases the chill and cough may be absent or they are very slight and it may be impossible to obtain sputum. On the pneumonia service at Passavant Memorial Hospital in Chicago, eighty per cent. of the pneumonias that have been admitted to this institution in the past ten years have shown insidious onsets, or they have been of a bazaar nature, presenting the picture of shock, an acute abdominal condition, renal crises or other infections. Under such circumstances the diagnosis of pneumonia cannot be made by the careful history and physical examination alone but it requires the application of all of the facilities which the hospital may offer, including x-ray examination of the chest, urine studies, blood counts, and blood cultures, together with repeated searches for specific pneumococci in the respiratory tract. The latter is facilitated by changes of the position of the patient, sharp slaps over the chest, turning them in the lateral positions with the arm high over the head, and encouraging deep coughs. The utilization of the throat swab and occasionally the tracheal catheter, or the washing of the patient's stomach, may recover the organism producing the disease. It must be emphasized that the respiratory tract may carry more than one type of pneumococcus and that specific serum therapy is to be most efficiently applied by repeated sputum typing, blood cultures, and mouse inoculations.

Pneumonia is a communicable disease which increases with virulence as it passes from host to host, so that the proper isolation of the patient adds protection not only to other members of the family but to those in atttendance as well. Further reasons for hospitalization are that the physical comfort of the patient is facilitated by adjustable beds, ample nursing equipment, including special set-ups for the administration of fluid, transfusing, the giving of serum, the combating of shock and reactions, the clinical determinations of blood sulfapyridine, blood chlorides, carbon dioxide, as well as blood counts and immune body tests.

NURSING CARE

Never before has nursing care been as important as that now required in the modern management of pneumonia. Nurses are preferred who have had much experience in creating a reassuring and quiet atmosphere and who are able to tactfully protect the patient from strenuous or apprehensive relatives and friends. Since the patient's strength is to be conserved in every way she should anticipate his needs. The grouping of the administration of food, fluid, and medications, together with similar attention to changing the patient's positions and attention to his elimination, are all important features of excellent nursing. Assistance in the administration of serum, parenteral fluid, the collection of specimens, the watching for shock, reactions, prompt application of therapeutic measures, are all important duties of the skilled nurse. Close observation and the continuous recording of all data, supplies the physician with the details necessary for the proper evaluation and treatment of this rapidly changing disease. It is to be recommended, therefore, that physicians give more attention to the detailed instruction of nurses, not only in the training schools, but to those who are already in private duty.

FLUID

The question frequently arises as to the amount and the nature of the fluid to be given to the pneumonia sufferer. This naturally depends somewhat upon the height and duration of the fever. It is my opinion that 3,500 to 5,000 cc. of fluid should be administered daily, chiefly as water. Fruit juices should be given very sparingly and then only as flavoring materials, such as lemonade or limeade. Since the pneumonia victim gradually develops an alkalosis if the disease is not terminated in the first three to four days, and since such an alkalosis interferes greatly with oxygen transport into the body, alkalizing substances such as the citrus fruits or alkaline powders should be withheld. When we know that the carbon dioxide may mount up to, and occasionally over one hundred volumes per

cent., it is evident that such an alkalosis is in itself a serious disorder. When the patient is unable to drink the prescribed amount of fluid, intravenous solutions of five or ten per cent. glucose are recommended. At this point I wish to state that it is my belief that sodium chloride solutions should not be used except 100 cc. per 100,000 units of serum to insure the intravenous injection of the serum. Work done by Simpson* and myself in our pneumonia research laboratory at Northwestern University clearly demonstrated that the well known disappearance of the chlorides from the urine and the reduction of the chlorides in the blood of the pneumonia victim are to be found in the diseased lung and its fellow. When salt solutions are given in the presence of pneumonia, pulmonary edema occurs and a sharp rise in the mortality ensues. This has been demonstrated not only experimentally but clinically, so that we regard the administration of salt solution as a dangerous procedure. It may be stated that the low blood chlorides and the alkalosis under discussion may be better combated by the oral administration of six to eight grams of ammonium chloride daily.

FOOD AND OXYGEN

We are in agreement with other students of the problem that 2,500 to 3,000 calories per day of simple, easily assimilable foods are to be offered. Such caloric support safeguards the functions of the myocardium, kidney and liver. The distention, nausea, and diarrhea are attributable to the toxicity of the disease and anoxia. Although the indications for the administration of oxygen may still be debated, the beneficial effects of oxygen in the pneumonia patient has been well established, the chief of which are the restlessness, nervousness and delirium are reduced. The temperature, pulse and respirations are lowered. Cough, expectoration and the migratory tendency are checked.

TABLE I

Effects of Oxygen Therapy in Pneumonia

(1) Restlessness, twitching, delirium relieved.
(2) Heart rate (ouput) decreased.
(3) Respiratory rate and effort decreased.
(4) Cyanosis improved.
(5) Temperature reduced.
(6) Distension relieved and appetite improved.
(7) Renal function improved.
(8) Pulmonary edema, cough and expectoration decreased.
(9) Migratory tendency checked.
(10) Mortality reduced.

*Thomas Simpson, Leeds, England, Fellow in Medicine, Northwestern University Medical School, Chicago, Illinois.

Distension is prevented or relieved, and the mortality is reduced. The most striking thing is the gross comfort which the patient derives as the anoxia is corrected. Experimental types I and II pneumonia in rats and dogs, carried on by Simpson and myself, have shown a prolongation of the lives of these experimental animals with an ultimate recovery of fifteen per cent. in the group receiving fifty or more per cent. oxygen in the inspired air, as compared to the early and one hundred per cent. death rate of the untreated controls.

TABLE 2

Types I and II Pneumonia in Rats; Effect of Oxygen on Mortality

Day of Disease	Control	Oxygen
1	..	..
2	45	19
3	71	56
4	100	70
5	..	81
6	..	85
Survivals	0	15

The past ten years has brought us to the position of administering oxygen continuously of fifty or more per cent. concentration to every patient who has pneumonia. Not only is the patient more comfortable, but his nursing care becomes much more simple and the mortality rate is reduced. Even though specific serum or sulfapyridine are given, oxygen should be administered until the patient is considered to be out of danger. Since the cyanosis of sulfapyridine masks the anoxia of the pneumonic process, and since the nausea and nervous symptoms of sulfapyridine toxicity seem to be benefited by oxygen, it is our practice to administer full therapeutic amounts of oxygen during the full period of sulfapyridine influence.

As to the methods of administering oxygen, our institution affords oxygen rooms, tents, masks, catheters, etc. The oxygen rooms are indispensable to the delirious patient who cannot be kept in a tent or who requires surgical or excessive nursing care. Many such patients are managed by the catheter technique. The larger transparent canopy is preferred when tents are used in that patients are less apprehensive and do not feel the sense of being enclosed. Careful attention must be given to keeping the patient well tucked in and to the repeated determination of the oxygen concentration in the tent, so that it reads well over fifty per cent. Likewise, the temperature should be kept well under seventy degrees and the humidity should be kept

under sixty. The carbon dioxide should not be allowed to rise over 1.0 per cent. because it is our personal experience that most people do not tolerate over 2.0 per cent. carbon dioxide without showing restlessness and fatigue to such an extent that they will insist on throwing off the tent. In order to insure a fifty per cent. alveolar oxygen saturation by nasal catheter, a flow of ten to twelve meters per minute is required.

TABLE 3*

Effects of Rate of Oxygen Flow and Respiratory Rate on Concentrations of Oxygen and Carbon Dioxide in Alveolar Air

Oxygen Flow per Minute	Percentage of Alveolar Oxygen at Respiratory Rates of: 6	16	30	60	Percent. of Alveolar Carbon Dioxide
4 liters	34	30	31	35	5.0
6 liters	46	35	37	40	5.2
8 liters	52	40	43	45	5.4
10 liters	62	44	48	49	5.3
12 liters	71	50	52	54	5.2
15 liters	74	56	60	60	5.0

Failures of oxygen administration by nasal catheter occur whenever the tip of the catheter is not placed near or just above the tip of the uvula, or when the oxygen is not adequately humidified in an approved humidifier, and whenever the catheter is allowed to remain in the nostril too long so that many of the holes are obstructed. In our experience, therefore, it matters little what method one uses so that he gives a full therapeutic dose of oxygen and keeps his equipment in proper order to insure his patient's receiving it.

BLOOD TRANSFUSIONS

Adequate oxygen therapy depends not only upon good equipment and the surrounding of the patient with an oxygen enriched atmosphere, but he must have an adequate amount of hemoglobin to absorb and carry the oxygen. The first two days of a pneumonia usually shows the red count to be a high normal but as the disease goes on, over one-half of the victims show a rapid decrease in the red blood count and hemoglobin content. Our experience has been that it is not wise to allow the red blood count to fall below 4,250,000. As many as six transfusions of 500 cc. each may be required in the course of a pneumonia to hold the blood arterial oxygens up to the required ninety per cent. With the advent of sulfapridine and its occasional depression of the red cells, a daily red count and the frequent transfusing of blood may be required. Our personal experience with the prolonged anemic effect of sulfapyridine requiring multiple transfusions weeks after the pneumonia has subsided has been observed by others. No difficulties or undue reactions have been experienced by such transfusions and their support has been so well defined that it is our policy to transfuse the pneumonia patient whenever the blood count falls below 4,250,000.

SYMPTOMATIC CARE

Quiet and rest are to be obtained by not only the establishment of pleasant surroundings, good nursing care, and the administration of oxygen, but sedatives such as the barbiturates are to be recommended. There are many slow, as well as quick acting barbiturates on the market, which are usually adequate to keep the patient in a dozing state without depressing him. Codeine is to be given by mouth or hypodermic ½ to 1 grain at a time, if pain or cough disturb the patient's rest. Pain, as such, is generally plural in origin and it may be relieved by a chest swathe and the administration of one (1) grain doses of codeine. Morphine may be given if pain is not otherwise controlled. Doses of one-sixth to one-fourth grain by single order may be advised, but the giving of morphine for restlessness which is due to anoxia is to be thoroughly frowned upon. Delirium may be due to anoxia which may be relieved by high concentrations of oxygen, while the delirium of the toxicity of the disease is better treated by type specific serum and the intravenous administration of one of the barbiturates. Avertin anesthesia may be very effective in uncontrolled delirium, especially when chronic alcoholism is a factor.

CIRCULATORY SUPPORT

Circulatory symptoms may be divided into the peripheral vascular, and cardiac manifestations. Specific cardiac support must be individualized and applied to those patients actually requiring it. Since pneumonia generally attacks the middle age group who have excellent hearts, it is not surprising that digitalis or allied heart drugs have very little beneficial effect. As a matter of fact, the tachycardia or the cardiac irregularities, so frequently seen in the course of pneumonia, are usually only relieved by adequate and continuous oxygen therapy. Shock may occur at the time of the severe pneumococcus invasion and it may be aided by keeping the patient warm, the administration of oxygen, together with the in-

*Reproduced from "Nasal Catheter Administration of Oxygen," Barker, Parker, and Wassel, J.A.M.A., July 28, 1934.

travenous administration of ten per cent. glucose solutions containing one (1) cc. of adrenalin per liter, until the period of shock has passed. Terminal shock, which is associated with respiratory and cardiac failure as well, offers no great hope for therapy, but the administration of high concentrations of oxygen (as near 100 per cent. as possible), the intravenous administration of ten per cent. glucose with one (1) cc. of adrenalin per liter, the transfusion of blood if the blood count is under 4,000,000, and the combating of alkalosis if it exists, may tide the patient over an otherwise fatal episode.

SUMMARY

My remarks in this symposium on pneumonia may be summarized by saying that:

1. Hospitalization of the pneumonia victim is to be urged because of facilitating the early diagnosis and the carrying out of specific and general medical measures.

2. Excellent nursing should serve as the most important adjunct in effecting adequate pneumonia therapy.

3. Careful attention to the physiologic demands regarding food, fluid, oxygen, and the combating of alkalosis and anemia as it may develop.

4. The symptomatic care of rest, pain, delirium, and circulatory support are to be carefully evaluated and individualized.

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SERUM AND DRUG THERAPY IN PNEUMOCOCCUS PNEUMONIA

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In very few diseases is there the record of steady upward progress such as the treatment of pneumococcus pneumonia has made. Rapid advances have been accomplished within the past few years through outstanding achievements by first, the concentration and refinement of antipneumococcus horse serum; second, the introduction of rabbit serum with its subsequent perfection of very potent concentration and thirdly, chemotherapy. The advent of sulfapyridine already threatens the continuation of the routine usage of antipneumococcus serum as a therapeutic agent. Investigators in this field must as a result, shift their activities rapidly to test the worth of these newer advances, first, in order to evaluate and confirm the efficacy of such new procedures, and, secondly, to put into practice as quickly as possible these new methods which save more lives. This paper illustrates such rapid activity movements.

Our early work with antipneumococcus horse serum was discontinued because of the advantages demonstrated by the rabbit serum. The rabbit pneumococcus antibody molecule is one-fourth the size of the horse serum antibody molecule, thus affording much greater effective penetration into the pneumococcus infected areas and body cavities. Concentration and refinement permits of sera with very high titre of unitage so that the therapeutic dosage can be administered in very small amounts rendering the technique of administration much easier, with the patient receiving much less foreign protein.

Experience with the use of antipneumococcus rabbit serum in 153 patients has convinced us of its superiority over horse serum. These patients were unselected, the availability of serum being the only criterion for nontreatment. The typing was accomplished by the Neufeld technic applied to the sputum. Blood cultures were routinely employed. Where necessary sputum culture, lung suction and mouse inoculation were utilized. Diagnosis when not sufficiently substantiated by adequate physical signs was always proved by x-rays study before treatment was initiated.

The sensitivity tests for rabbit serum consisted of the ophthalmic, the intracutaneous and the intravenous pressor tests. The latter two procedures were so frequently equivocal in their results that we had to rely practically solely on the ophthalmic technique. In the entire series there were no positive ophthalmic reactions. The intracutaneous test was frequently positive. The pressor test revealed alterations of pulse rate in several instances. The serum administration did not produce one occurrence of an immediate reaction, nor was there any correlation between positive skin tests and thermal reactions or late serum effects. The latter, in the form of fever, erythema, urticaria, arthralgia, alone, or in combination, appeared in 28% of the patients,

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Read before Section on Medicine, Illinois State Medical Society, Rockford, May 3, 1939.

seven to fourteen days after injection. Thermal reactions were low in incidence in this series occurring in only 8% of the last sixty-nine consecutive patients treated by our single total dose method.

The results of rabbit serum therapy can best be evaluated by referring to the control series first. These patients were given routine therapy, namely fluids, oxygen, supportive and symptomatic measures without serum. This investigation was initiated before free serum was distributed by the State pneumonia control program and what serum we received was donated by the manufacturers. Today we believe an untreated control series is unjustifiable as a study because of the very high mortality in a non-treated group of patients.

Table 1, the non-treated controls, comprises 164 patients with 63 deaths, a total mortality rate of 38.4%, with twenty-one different types of pneumococci. There were thirty-six patients over fifty years of age, with twenty-four deaths, a mortality of 66.7%. Thirty patients had positive blood cultures, of whom 18 died, a mortality rate of 60%. Attention is directed to each individual type, and the number of deaths in each type with the percentage mortality. The tabulation illustrates vividly the very much higher mortality found in the bacteremic cases.

Table 2 presents the data in the anti-pneumococcus rabbit-serum treated series with a total of 153 patients. These were similar in age and sex grouping to the controls. The time incidence is the same as this is, practically an alternate case study. Bacteremia was slightly higher in the controls. There were fifteen deaths in the series, a mortality rate of 9.8%. However, four death occurred within eighteen hours of treatment. Two of these deaths had Type III infection, one was Type VII and the remaining one Type VIII.

These four should be discarded, permitting a corrected mortality of 7.2%. The bacteremia figures are most important, twenty-three positive blood cultures with six deaths, a mortality rate of 26% compared with the 60% mortality in the controls. The analysis of Type I reveals a 6% mortality in thirty patients treated with serum, compared to 26% mortality in forty-nine patients for the controls. The bacteremia figures are equally striking. The serum treated showed a 16% mortality with 40% for the controls. Type III had a 21% mortality in fourteen patients. If permitted to discard the two patients who died a few hours after therapy, the mortality rate would be 8% compared to 61% in our controls.

Type VII comprised a large number of the rabbit-serum treated patients. The mortality rate was 7.6% in twenty-six patients, compared to 35% in the control statistics. In Type VII infection, the mortality in the non-serum treated bacteremic controls was 100% in four patients, while two or three bacteremic Type VII patients were saved by rabbit serum.

These figures definitely demonstrate the efficacy of antipneumococcus rabbit serum as a therapeutic agent in pneumococcus pneumonia. The effectiveness is indicated by mortality figures showing death occurring five times more often in the non-serum treated controls. Such effectiveness in biological therapy is probably surpassed only by diphtheria antitoxin in the treatment of diphtheria. Table 3 illustrates the unitage and dosages which were employed in the various types of infecting pneumococci.

Our experience with sulfanilamide has not been as satisfactory as reported by other investigators. In ninety-seven patients with a type distribution similar to both the control and rabbit series the mortality rate was 28%. This is better than the general mortality of the control series but does not approach the results obtained with rabbit serum. The dosage employed was adequate, averaging from six to nine grams daily. A study of the blood concentration of sulfanilamide is illustrated by the tabulation.

These figures are relatively low. We explain this fact by stating that fluids were administered intravenously in large amounts daily so that a drug as readily diffusable as sulfanilamide was quickly washed out of the circulation. We are forced to conclude from this experience that sulfanilamide is not especially effective in pneumococcus pneumonia.

Sulfapyridine: With the reports of Whitby,[6] Evans and Gaisford,[7] corroborated by the extremely favorable results obtained by investigators in this country,[8,9] sulfapyridine has rapidly assumed an active and potent position in the antipneumonia armamentarium. Through sulfapyridine, chemotherapy threatens to displace the exalted position held by serum therapy. Sulfapyridine is relatively insoluble. It is

slowly absorbed from the gastro-intestinal tract. Nausea and vomiting are frequently induced. All of these factors tend to interfere with an adequate concentration of the drug in the blood. These difficulties will be readily obviated when the soluble injectable sodium salt is more readily available.

The drug has not affected the ordinary routine of typing and blood culture studies when the disease is still active. The dosage employed usually consisted in the initial administration of two grams followed by one gram doses at four-hour intervals continued for forty-eight hours after the temperature became normal, then continued for several days at six-hour intervals. The blood concentration levels for both free and conjugated sulfapyridine were estimated frequently. Blood counts were taken almost every day while the drug was administered.

Untoward Effects: The most common difficulty encountered was the nausea and vomiting. Vomiting occurred in 12 out of 60 patients, in four patients necessitating discontinuance of the drug. There were no instances of skin or kidney reactions in this series. The white blood count was not affected. The red cells, however, were definitely diminished, showing an average drop of one million cells, with a maximum of 1,500,000 in forty-eight hours. Blood transfusion was used in one patient.

Results: The patients treated with sulfapyridine were unselected. Typable pneumococcus pneumonia are alone included here. We did not control this series with untreated contemporary comparisons for several reasons. First, pneumonia mortality in our institution for the past five years in non-serum treated cases has averaged from 30% to 39%. This is mainly due to the class of patients which we receive, a majority, undernourished, suffering from extreme exposure, and a high incidence of alcoholism. No investigator has the right to decide to withhold a treatment which has demonstrated it will save twenty-five to thirty lives which would otherwise have been lost, where one hundred pneumonia patients are admitted. We believe the day has passed for the untreated pneumonia control series.

Secondly, this sulfapyridine series cannot be criticized by the statement that the pneumonias were benign. For example, Type II is a virulent form of pneumococcus infection. It constituted 25% of our series with a bacteremic incidence of 30%. Yet we did not lose a patient of this type. Thirdly, the age tabulation indicates that the pneumonia frequency was high after fifty years of age but that recovery ensued on sulfapyridine treatment.

The results of the study with sulfapyridine therapy are indicated in Table 5. Sixty patients were treated, with 2 deaths, a mortality rate of 3.3%. The bacteremic incidence was 25% or 15 in number with no deaths. There were no deaths in Type I despite four positive blood cul-

TABLE 1

Control Types of Cases Not Treated With Serum

Type	No.	Deaths		Bacteremia		
		No.	Percent	No.	Dead	Percent
I	49	13	26	10	4	40
II	34	16	47	6	4	67
III	18	11	61	1	1	100
IV	3	2	67	0	0	0
V	6	5	83	4	3	75
VI	2	0	0	0	0	0
VII	17	6	35	4	4	100
VIII	8	1	12	2	1	50
IX	3	1	33	0	0	0
X	1	0	0	0	0	0
XII	5	2	40	1	0	0
XIII	2	0	0	1	0	0
XIV	2	0	0	0	0	0
XVI	1	0	0	0	0	0
XVII	2	0	0	0	0	0
XVIII	2	2	100	0	0	0
XIX	5	2	40	1	1	100
XXI	1	0	0	0	0	0
XXIII	1	1	100	0	0	0
XXVIII	1	1	100	0	0	0
XXIX	1	0	0	0	0	0
Totals	164	63	38.4	30	18	60

TABLE 2

Types of Serum Treated Cases

Type	No.	Deaths		Bacteremia		
		No.	Percent	No.	Dead	Percent
I	30	2	6	6	1	16.7
II	34	3	8.8	6	3	50
III	14	3	21	0	0	0
IV	11	1	9	2	0	0
V	2	0	0	1	0	0
VI	1	0	0	0	0	0
VII	26	2	7.6	3	1	33
VIII	16	3	18	0	0	0
XII	2	0	0	0	0	0
XIV	2	1	50	1	1	100
XV	1	0	0	0	0	0
XVII	1	0	0	0	0	0
XVIII	3	0	0	1	0	0
XIX	1	0	0	0	0	0
XX	1	0	0	0	0	0
XXIII	1	0	0	1	0	0
XXIV	1	0	0	1	0	0
XXV	2	0	0	0	0	0
XXVIII	1	0	0	0	0	0
XXIX	2	0	0	1	0	0
XXXI	1	0	0	0	0	0
Totals	153	15	9.8	23	6	26

Corrected Mortality (4 deaths under 18 hours) 11 deaths 7.2%.

TABLE 3

Dosage Analysis (Includes Total and Repeated Doses)

Type	No. of cc. per Patient Aver.	Max.	Min.	No. of Units per Patient Aver.	Max.	Min.
1	33.5	120	10	123,800	250,000	100,000
2	27	55	14	117,600	240,000	46,500
3	51.8	120	12	135,000	180,000	100,000
4	26	40	15	155,600	231,000	92,500
5	20	20	20	120,000	120,000	120,000
6	20	..	..	160,000	.....	.....
7	21.6	50	5	210,000	450,000	70,000
8	27.6	40	18	139,300	180,000	70,000
12	38.5	40	37	116,000	120,000	111,000
14	38	40	36	180,000	180,000	180,000
15	100	..	..	400,000	.....	.....
17	20	..	..	60,000	.....	.....
18	33	40	20	133,000	160,000	80,000
19	41	..	..	165,000	.....	.....
20	40	..	..	200,000	.....	.....
23	40	..	..	120,000	.....	.....
24	80	..	..	240,000	.....	.....
25	32.5	45	20	140,000	180,000	100,000
28	40	..	..	120,000	.....	.....
29	41	..	..	165,000	.....	.....
31	40	..	..	120,000	.....	.....

The unitage presented, as described on the manufacturer's label.

TABLE 4

Sulfanilamide Blood Concentration Milligrams per 100 cc.

	Free	Conjugated	Total
Average	4.24	1.57	5.82
Maximum	8.13	2.7	11.0
Minimum	0.7	1.2	1.9

TABLE 5

Sulfapyridine Treated

Type	No.	Deaths No.	Deaths Pct.	Bacteremia No.	Bacteremia Deaths	Bacteremia Pct.
I	14	0	0	4	0	0
II	16	0	0	6	0	0
III	5	0	0	0	0	0
IV	1	0	0	0	0	0
V	2	0	0	1	0	0
VII	10	1	10	2	0	0
VIII	3	1	33	0	0	0
IX	1	0	0	0	0	0
XII	3	0	0	1	0	0
XVI	1	0	0	1	0	0
XVIII	1	0	0	0	0	0
XIX	1	0	0	0	0	0
XXIII	1	0	0	0	0	0
XXIV	1	0	0	0	0	0
Total	60	2	3.3	15	0	0

tures. Type II has already been referred to. While this series is admittedly small, nevertheless the study is most significant. Table 7 shows the blood concentration levels; the average, the maximum and minimum milligrams attained for free, conjugated and total sulfapyridine. Table No. 8 graphically demonstrates the blood and urinary levels studied in two patients upon the stated dosage throughout the course of the disease. In the two patients who succumbed, the blood concentration levels for free sulfapyridine were 11.6 mgm. and 4.3 mgm. respectively. Table 6 shows many recoveries with much smaller blood concentration levels. The inference is that the prognosis is not determinable by the concentration level in the blood.

Comments: We believe a comparison between these various groupings of patients is permissible for reasons stated above. Serum treatment and chemotherapy both demonstrate remarkable

TABLE 6

Age Groups Sulfapyridine Treated

Age	No.	Deaths No.	Deaths Pct.	Bacteremia No.	Bacteremia Deaths
11-20	6	0	0	2	0
21-30	14	0	0	3	0
31-40	14	0	0	3	0
41-50	10	0	0	4	0
51-60	12	1	8.5	2	0
61-70	3	1	33	0	0
71-80	1	0	0	1	0
Total	60	2	3.3	15	0
Patients over 50 years of age	16	2	12.5	3	0

TABLE 7

Sulfapyridine Concentration in the Blood Milligrams per 100 cc.

	60 Patients Average	132 Analyses Maximum	132 Analyses Minimum
Free	7.05	11.6	1.2
Conjugated	2.03	3.7	0.10
Total	9.75	13.2	1.4

TABLE 8

A Study of Two Patients Illustrating Concentration of Sulfapyridine in the Blood and Urine

Date	4/18	4/19	4/20	4/21	4/22	4/24	4/25	4/26	4/27
1. A.C. Age 39 Type VII									
Oral dose in grams 13.0	4	6	3	0	0	0	..	..	..
Blood Mgm per 100 cc	..	8.4	4.6	4.5	Trace	None	..	..	..
Urine Mgm per 100 cc	..	..	..	..					
Free	..	..	105	..	..	25	Trace	None	..
Conjugated	..	..	30	..	..	..	..	..	..
Total	..	..	135	..	..	..	..	..	..
2. A.A. Age 43 Type XII Positive Blood Culture									
Oral dose Grams 39.0	6	6	6	6	6	4	4	1	..
Blood Mgm per 100 cc	..	7.2	4.4	3.6	4.9	5.3	4.9	Trace	None
Urine Mgm per 100 cc	..	..	..	..	..	..	..	..	..
Free	..	..	103	..	..	108	66	72	Trace
Conjugated	..	..	56	..	..	..	23	18	..
Total	..	..	159	..	..	..	89	90	..
Lobes and Complication	R.M.L.		R.U.L.			Pleural Effusion			Recovery

results when compared to the untreated controls. Sulfapyridine has definitely achieved an unassailable position as an excellent treatment for pneumococcus pneumonia. The rapid descent of the temperature to normal is a typical response. The ease of administration, the low cost comparatively, the freedom from serious reactions, and minimal toxicity in our hands, all favor the use of sulfapyridine. Supportive and symptomatic therapeutic measures have been reduced very greatly, with a consequent important reduction in the cost of care, including thus both the initial and total expense and the nursing care.

Can the combination of antipneumococcus serum and sulfapyridine enhance the already favorable results where these two therapeutic agents are utilized alone? Or is the irreducible minimum attained by the individual application of these remedies? Is not the reduction to the irreducible minimum to be secured by the earlier institution of the individual therapy? It must be understood that biochemical, physiological and pathological changes in the human body produced by disease reach a point where reversibility to health or normal cannot result through any medium. Irreversibility cannot be altered by a combination of therapeutic agents any more than by their employment singly and individually. Very careful analyses must determine this solution by newer studies meticulously controlled.

Summary and Conclusions: Serum treatment and chemotherapy, individually and single, are both effective therapeutic methods in the treatment of pneumococcus pneumonia. Our studies indicate a reduction in mortality to one-fourth or one-fifth of the mortality in the non-treated control series. Our experience favors the use of sulfapyridine for the various reasons outlined in this paper. Serum should be employed where the drug cannot be used or where improvement does not result from chemotherapy. Naturally, great difficulty will be encountered in the application of this latter indication.

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THE ROENTGEN RAYS IN MANAGEMENT OF THE PNEUMONIAS

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As the result of the inflammatory process in any form of pneumonia there occurs an exudation of substances from the blood into the alveoli. This material tends to obstruct the passage of roentgen rays. In addition, some of the normal quantity of air in the alveoli is displaced. As the result a shadow of varying density is produced. This shadow is not specific. Its location, shape and distribution approximates the distribution and extent of the pathological process in the lung.

In lobar pneumonia the inflammatory process begins in one portion of the lobe and not infrequently portions of the lobe remain uninvolved through the entire course of the disease. During the first week, the shadow is dense and fairly uniform and when it extends to an edge of the lobe it is sharply demarcated. The opacity will gradually taper into air-containing lung tissues where the thinner portions of the lobe are situated. The time of crisis does not cause much change from a roentgen ray standpoint. The period of resolution as studied by roentgen rays lasts anywhere from one to three weeks. The uniform shadow becomes mottled and if the process is occurring in the upper lobes tuberculosis must be seriously considered in the differ-

Presented before Illinois State Medical Society, Rockford, Illinois, May 3, 1939.

ential diagnosis. Cavities often occur during resolution. These cavities are the result of liquidification of an infarcted area and the expectoration of the material. Since this material lacks odor these areas are called aputrid necrosis. A gangrenous lung abscess rarely has any relation to lobar pneumonia. This is just another example of how the roentgen ray findings must be correlated with the clinical diagnosis in order to arrive at a diagnosis.

The ordinary form of bronchial pneumonia which in adults usually follows a benign course is best termed simple lobular pneumonia.

Suppurative bronchial pneumonia occurs often as the result of complications of sinusitis, measles, pertussis, whooping cough, influenza and aspiration of foreign bodies. When suppurative bronchial pneumonia occurs in the upper lobe pulmonary tuberculosis must again be considered and usually can only be differentiated by progress films. Lung abscess may follow suppurative bronchial pneumonia with the appearance of cavities in from 10 to 14 days with very foul sputum.

The roentgen ray appearance of bronchial pneumonia is usually that of single or multiple areas of increased density usually located near the course of the larger bronchi. These areas are of varying size and their outlines are hazy. The lesions are usually multiple. There is often variation in the different parts of the same area as well as between different areas. Resolution takes place gradually but is usually complete in from 10 to 21 days. The differentiation of bronchial pneumonia from lung abscess, bronchiectasis and even malignancies depends on the course and clinical findings. A lung abscess will eventually show a cavity. As a rule metastatic malignancy causes the lesions in the lung to be more sharply defined, but unfortunately this is not always true. Shadows due to bronchiectasis will diminish following expectoration of a large amount of sputum.

A complication of pneumonia is pleurisy with effusion. Lobar pneumonia is differentiated from pleurisy with effusion by the fact that in lobar pneumonia of a lower lobe or of the right middle lobe the costophrenic angle remains clear until all the rest of the lobe has become involved. In pleurisy with effusion the costophrenic angle is the first point which is obscured. This brings us to the question of technique which is most important. If at all possible films of the chest should be taken in the erect or semierect position so that any fluid present will collect at the costophrenic angle. It might be well to state that it takes approximately 120 cc. of fluid to be visible and therefore a small amount of fluid may be present and not be detected by the roentgen ray. If there is any question about the presence of fluid, an upright film and one horizontal will as a rule show a shift in the density of the base of the chest, indicating that in the upright position fluid has collected at the costophrenic angle and in the horizontal position fluid has spread out over the entire lung. It is true that with rather thick, tenacious material there may be no shift in position. Encapsulated fluid will of course show no change in position. In an attempt to diagnose encapsulated fluid lateral upright films are recommended. A lateral film is of value for lesions of the right side, since the right lower lobe is thus readily visualized. In a very sick patient in whom pneumonia is suspected clinically an overexposed film of the chest may prove of value, as demonstrated by Rigler. In this way the rays penetrate the heart and show consolidations that are ordinarily covered by the heart shadow.

Powell has recently shown that the acute pneumonias often respond very well to roentgen ray therapy. He cites 231 cases which he has treated, of whom 16 have died, with a mortality rate of 7%. The cases are treated a great deal like other infections, although possibly a slightly larger dose is used as he suggested: from 250 to 350 roentgen at 135 K.V., 3 mm. of aluminum and 40 cm. distance. If improvement has not resulted in 36 hours a somewhat smaller dose is given. All Type 2 and 3 lobar pneumonia which he has treated have recovered.

SUMMARY

1. Roentgen ray examination of the chest should be done in the erect or semierect position.

2. Lateral films of the chest are recommended when at all possible.

3. The clinical findings must be correlated with the roentgen ray findings. This is especially true of lesions of the upper lobe where the possibility of tuberculosis must be considered.

4. Fluid in the pleural cavity may often be proven by taking films of the chest in the upright

and horizontal positions. A change in density with a change in position is indicative of fluid.

5. Irradiation therapy in the pneumonias should prove of value as it does in other infectious conditions.

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PNEUMONIA IN CHILDHOOD

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In discussing the topic of pneumonia in childhood, I shall try to present to you the modern interpretation of the etiology and classification of this disease with particular attention to a discussion of the recent investigations pertaining to the predominant types of pneumococcic infections occurring in childhood. Time will not permit a discussion of the pertinent diagnostic points, nor any consideration of the more common diseases to be thought of under the heading of differential diagnosis. Factors influencing prognosis will be mentioned with a few final remarks pertaining to the modern methods of chemotherapy and serotherapy as influencing this disease in childhood. A brief analysis of the author's experience with such modes of treatment concludes my remarks.

For centuries attempts have been made to classify the pneumonias in childhood from the standpoint of symptomatology and clinical findings and from the viewpoint of the pathologist. Later attempts have been made to classify the disease by x-ray findings, and more recently by a study of the etiological causes. It is safe to say, however, that no one category can be of aid in classifying all cases, but the physician must consider all the above possible angles of classification to properly diagnose the individual case at hand. Formerly, it was sufficient for the physician to be able to say that the child did or did not have pneumonia. Then came the time when the attending man desired to be able to distinguish between the lobar and the bronchial varieties, but now it is not enough that he be satisfied with whether or not he is dealing with lobar or bronchopneumonia; he must know the specific type of pneumococcus or other bacterial agent causing the pneumonia at hand. Assuming that it is a lobar pneumonia and of pneumococcic origin, he must now attempt to learn the infecting specific type of pneumococcus and then proceed to inaugurate one of the newer modes of therapy, namely, the use of specific serum or one of the new azo dyes, more specifically, sulphapyridine. In simpler terms, when the physician today speaks to a fellow practitioner and tells him that he has a youngster with pneumonia, the most likely response to his statement will be this question, "Have you started sulphapyridine?"

It can safely be said that the vast majority of uncomplicated pneumonia occurring in childhood are due to the pneumococcus. It is an old idea that pneumonia occurring in the first year or two of life was nearly always bronchopneumonia, but that idea is definitely erroneous and carries with it the false assumption that all pneumonias occurring early in life are accompanied by a very high mortality rate. It may be said now that uncomplicated lobar pneumonia particularly in children over two years, is a relatively mild disease so far as the death rate is concerned. We must remember that lobar pneumonia may occur at any age and that bronchopneumonia may at times assume a lobar distribution.

In discussing the etiology of pneumonia, the importance of age is particularly noteworthy. It is a well known fact that bronchopneumonia occurs secondary to some infection, particularly measles, whooping cough, the common cold and the ill-defined group known as influenza. Children in the first year or two of life have little or no immunity to the causative agents of these diseases which act to lessen the infant's resistance to secondary invasion by organisms such as the hemolytic streptococci, staphylococci and the pneumococci or any combination of these, all of which may set up a virulent bronchopneumonia.

When we consider the true primary or lobar pneumonias of childhood, we must not forget

Read before Section on Medicine, Illinois State Medical Society, Rockford, May 3, 1939

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the fact that the pneumococcus is the etiologic agent in probably 80% to 90% of these cases. Pneumonia may result from contact with a child who has pneumonia, or from a carrier, or it may be of endogenous origin. There is no doubt but what 50% or more of older children may at times harbor some type of pneumococcus in their upper respiratory passages and due to some temporary loss or lowering of resistance, the disease may become evident. However, the finding of Types I, II, V, VII or VIII in the sputum is quite rare except in the presence of a true pneumococcic infection, since these are rarely normal mouth inhabitants. Today, then, we are trying to classify the pneumonias of childhood, as far as possible, on a specific etiological basis, namely, lobar pneumonia, which usually appears as an uncomplicated pneumococcic infection, and bronchopneumonia, which has a wider variation of etiology and clinical manifestations and is usually a mixed infection. However, it must not be forgotten that the pneumococcus may be the primary invader in cases of bronchopneumonia.

We must consider several rather specific types of bronchopneumonia the result of some peculiarity of the infecting organism or an unusual response on the part of the host. Streptococcic pneumonia is distinguished as being a rather severe type of bronchopneumonia, associated with hemorrhage into the pleura and often empyema. It should be diagnosed or suspected if the pneumonia is secondary to a specific sore throat or scarlet fever or if the streptococcus is isolated from the blood stream or pleural cavities.

Pneumonia due to the staphylococcus is particularly important in the first six to twelve months of age. This organism has a characteristic tendency of producing multiple abscesses in the lungs with associated empyema. This tendency to widespread infection is usually merely an indication of an accompanying blood stream infection with the same organisms. The diagnosis must be confirmed in these cases by either blood cultures or pleural fluid cultures. While the very nature of this type of infection rightfully presupposes a high mortality rate, yet cases of recovery are reported by the early recognition and treatment of the accompanying empyema, associated, of course, with other supportive measures. There is a possibility that the new staphylococcus antitoxin of Julianelle of St. Louis may be of value in these cases. Fortunately, this variety is not a common type of bronchopneumonia. The author recently saw one such case. However, that began as a supposed grippal infection which was rapidly followed by marked dyspnea and cyanosis with purulent sputum, which on examination revealed loads of the Stapyhlococcus aureus in pure culture and the typical "cotton ball" x-ray evidences, with fatality within 48 to 72 hours from the onset of the pneumonia. Many will recall that this type of pneumonia was observed in many of the Army Camps associated with the influenzal epidemic in 1917-18.

Recently Trask[1] has considered the Pfeiffer Bacillus as a common complicating organism in bronchopneumonia of childhood. Many autopsies on children dying from pneumonia revealed the association of the organism with a Type III pneumococcus. Pathologically, it has been shown that the influenzal types of pneumonias in children are characterized by a bronchial infection which spreads downward, causing obstruction of the smaller bronchioles. As a result of this necrotic obstruction some air can enter the terminal alveoli but it cannot escape and a rather characteristic type of asthmatic breathing with dyspnea and hyperresonance to percussion is noted. I think that it is well that we call to mind here that the Pfeiffer Bacillus or the influenzal bacillus is not considered today as having any etiologic relationship to the disease commonly known as influenza.

The diagnosis of capillary bronchitis is usually made by the detection of generalized fine rales with rather marked cyanosis and dyspnea in younger children. Usually there is no distinct area of localized consolidation discernible. I think it is only proper today to consider these cases as cases of bronchopneumonia. Certainly, the majority of these cases are more than a simple bronchitis, as evidenced by their clinical course and the manifestations of illness which the child presents. Two other types of pneumonia of bronchopnèumonic character which one may occasionally see in infancy are lipoid pneumonia, due to the inhalation of oils or fats, and kerosene pneumonia, due to the aspiration of common coal oil into the lungs. In this geographical area where respiratory illnesses of the nose and throat are so prevalent with widespread usage of various types of nose sprays and drops, I think it well that we pause to consider for a moment the lipoid type of pneumonia.[2]

Pulmonary changes due to lipoid irritation are probably more common than suspected. The disease is characterized by a rather chronic course, often of months' duration. Due to the anatomy of the bronchial tree the right lung is more often invaded than the left. Usually there is no fever unless some secondary infection supervenes. The usual substances which may produce this type of irritation in the lung are cod liver oil, mineral oil and milk fat. It has always been quite interesting to me why we do not see more children who are victims of foreign material in the trachea than we do see, but in the normal infant the larynx apparently functions quite efficiently as a safety device for the trachea. This type of pneumonia should be suspected in marantic babies or in those who for some reason or other may have a suppressed cough reflex, or in whom vomiting may have been the outstanding symptom, or in instances where there has been frequent and prolonged use of oily nose drops. It is known that the animal oils are much more irritating than the majority of vegetable oils, since they contain a large amount of fatty acid. Further evidences that the clinician may be dealing with this type of pneumonic process is evidenced by the x-ray findings, which show rather characteristic patches of consolidation extending outward from the hilus, usually more marked on the right side due to the anatomical contour of the right bronchus, allowing aspiration of the oil into that particular location.

The importance of the common household fuel, kerosene, as a cause of pneumonia in infancy has not received much consideration in pediatric literature. Undoubtedly, the condition is a much more common happening than medical literature denotes. It has long been recognized that the inhalation of the vapor of kerosene was toxic, but not much attention was accorded to the possibility of aspiration of the oil into the lungs, with subsequent lung damage. It has been the unfortunate privilege of the author to see three rapidly fatal cases of bronchopneumonia, proved at autopsy, due to aspiration of coal oil into the bronchial tree following strangulation by the oil. These children die very quickly, usually within six to twelve hours, of a rapidly fatal bronchopneumonia, clinically characterized by extreme dyspnea and extreme cyanosis.

Waring[3] surveyed the literature on this subject in 1933 and noted that only seven fatal cases had been reported in children. He had nine cases of his own, only two of which recovered. Animal experimentation confirms the fact that kerosene poisoning is serious and fatal, due to a rapidly developing pneumonitis with edema of the lung. This same phenomena was seen in many cases of war gas poisoning, particularly with phosgene. To my knowledge no regime of therapy is effective in these cases, and the amount of oil which must be aspirated to produce death is also uncertain. It would seem, however, that immediate postural drainage, literally hanging the child by his heels, might lessen some of the pulmonary irritation. I mention this type of pneumonia because kerosene is such a common household article and mothers are negligent in leaving the coal oil can accessible to some toddling child.

The physician must not lose sight of the fact that the primary tuberculous infection of childhood may occur at any age in childhood, and if it does occur before the age of two or three years may be quite fulminating and often exhibit the clinical picture of a typical pneumonia. Pneumococcic infections may produce hilar shadows by x-ray similar to those commonly seen in the primary tuberculosis of childhood. The physician is aided in differentiating these two conditions by the fact that hilar shadows due to pneumococcic infections clear more quickly than those due to tuberculosis. The reaction to tuberculin, the history of possible home contacts or an investigation of the sputum, stools or guinea pig inoculation for positive evidences of tuberculosis should serve further to differentiate tuberculous infections from pneumococcic. In my experience the x-ray is valuable in giving further evidence of the probable tuberculous origin of the lung infection. Prognosis of many of these cases is very bad, particularly if the age is quite low, and a high percentage of them will succumb to a generalized tuberculous infection in six to nine months following the primary tuberculous complex. I have learned to suspect a possible tuberculous etiology in many of my pneumonias that present variable convalescence. The Mantoux will usually serve to clarify this question.

Several investigators[4] have recently noted that some allergic children may present a pulmonary

infection similar to bronchopenumonia, apparently arising as a result of a severe asthma with a superimposed infection in the lung. The evidence suggesting an allergy as a basis for this entire picture is based upon the fact that these cases usually run a very short duration with a relatively low white blood count plus marked asthmatic symptoms and are improved by adrenalin and warm air.

The foregoing various classifications, I feel, will cover practically all of the cases of pneumonias in children which any practitioner may encounter. I feel, however, that today no diagnosis of pneumonia is complete unless the physician can state the character of the pneumonia and the type of etiologic agent producing it.

Pneumonia is one of the many diseases of childhood which places a great responsibility upon the shoulders of the attending physician from the standpoint of accuracy of diagnosis. The parents want to know at once whether or not the child has pneumonia, because this disease still strikes terror in the heart of every parent. To be able to arrive at the settlement of such a question the physician must consider many possible diseases in differential diagnosis. The clinical findings, physical signs, and x-ray may all be necessary at times to establish the diagnosis of a pneumonic process, but the incident bacterial cause can be known only by bacteriologic methods. The complete working diagnosis of pneumonia demands knowledge of the organism producing the disease. This is obtained by sputum studies—even a single examination of a stained smear will often yield all the information needed. I feel that any child, ill with pneumonia, should be submitted to the following investigative procedures: 1. A complete blood count; 2. A blood culture; 3. An x-ray of the chest; and 4. Sputum examination for bacteria, and for typing, if pneumococci are in evidence. Special culture of the material obtained on a laryngeal or nasopharyngeal swab will be necessary if few or no pneumococci are evidenced by direct examination.

TYPING

There are several important reasons for typing the sputum of any child who has a pneumonia:

1. Determination of the specific type of pneumococcus present is a prerequisite for the use of a specific antiserum and should be done before the administration of sulphapyridine, since this drug may cause a loss of type specificity and would leave one uncertain as to the type of serum therapy desirable.

2. Knowledge of the type is an aid in establishing a prognosis for the parents.

3. Knowledge of the type presupposes the development of certain complications, i.e., Type I or II is associated with empyema.

TECHNIQUE OF TYPING

It is well here to make a few remarks as to the means of obtaining sputum or material for typing. Many men seem hesitant to try typing the sputum of a child because they consider the obtaining of such a specimen as quite a difficult task. There are several ways one may obtain the needed specimen, the ordinary method, of course, being that of having the child expectorate in a container, but this is exceedingly difficult in young children who swallow their secretions. In these children very frequently a specimen can be obtained by the use of a laryngeal swab or by gently tickling the posterior pharynx and inducing an attack of coughing. A pharyngeal swab may be taken and inserted in broth for four hours and then the smear searched for organisms, and, if pneumococci are found, the Neufeld method of ascertaining the type is carried out. If none are found, a mouse may be injected and in two or three hours the peritoneal fluid examined. Another method of considerable value in small children is that of examining the gastric contents, which frequently reveals the causative organism due to the fact that the secretions are swallowed. In some clinics the method of lung suction is employed, whereby some plasma broth is inserted in a syringe and then the procedure carried out like an ordinary thoracentesis with actual lung puncture. This procedure has always seemed to me as being an unnecessary one, particularly in children. Frequently one can use the pus obtained from an empyema for typing, and, of course, the growth obtained on a positive blood culture is exceedingly valuable for such purpose. However, one hates to wait twenty-four to forty-eight hours for any growth on blood cultures.

Distinguishing of the type of organism has to do particularly with very recent work dealing with typing of pneumococci. As previously stated, it is true that 85% to 90% of the pneumonias of childhood are due to a variety of pneumococci, and antisera have been prepared for most all of these varying types. While it is true

that the majority of work of an outstanding character which would seem to indicate the importance of the typing of the pneumococcus in its relationship to mortality and treatment has been done in the field of adult pneumonia, recent work is indicative that certain types of pneumococci are particularly important in the pneumonias of childhood. Bullowa and Greenbaum[5] studied the age distribution and mortality for the thirty-two types of pneumococci in 539 cases of pneumonia in infants and children from 1928 to 1934.

I have compiled the following chart from their studies:

539 Non-Serum Treated Cases	Type XIV	Type VI	Type XIX	Type I	Unclassified	Mortality
Under 2 yrs.	18%			5%	70 in entire 539	16% Lobar
151 Lobar	15%	13%	7.3%	23%	cases, or 13%	34% Broncho.
262 111 Broncho.	Mortality			Mortality	15 cases or 3%	25%
2-12 yrs.	13%	8%	3%	24%	of total, 539 cases	
235 Lobar	15%			4-6%	had multiple in-	6% Lobar
277 42 Broncho.	Mortality			Mortality	fections	14% Broncho.

Type XIV carries about a 15% mortality rate in both old and young children.

Comparison of Common Types in Primary Pneumonias in Infants and Adults: (Bullowa and Coworkers)[6]

Infants under 2 yrs.....	XIV	VI	XIX	I
Adults	I	III	II	V
Incidence of Bacteremia	Adults	23%	Mortality	
	Infants	7%	75%	
	Children	4%	83%	
Average mortality for main types	Adults	27%	25%	
	Infants	16%		
(Non-serum treated cases)	Children	4.6%		

INDICATIONS FOR USE OF SPECIFIC SERA

Finding a type specific infection associated with a positive blood culture, I feel one must use an antiserum regardles of the general well-being of the patient. The greater availability and the ease of typing has done much to enhance the more general use of sera. One may use the argument that lobar pneumonia in older children carries with it such a low mortality rate that it is not worth while trying to type the organism and give serum, and, while that statement is true, I feel that it is indeed a risky and unwise frame of mind to always follow such an attitude. Any method of treatment which will further reduce the low mortality is certainly worth while to employ. The physician feels much more confident if he has the knowledge that he is dealing with a certain specific type of pneumonia for which he has, at his wish, a highly valuable combative agent in the form of antisera. If the patient is extremely ill, with considerable cyanosis and a very rapid pulse and a type specific infection, regardless of the absence of a positive blood culture, certainly one is wise in considering the use of serum, regardless of the low mortality rate for the older age group of children. Specific serum should also be administered in those cases failing to respond to sulphapyridine in the usual manner after thirty-six hours of adequate therapy with that drug.

I think that probably every child with a Type II pneumonia should receive serum and even in greater quantities than we would use in Type I infections. We know that Type II pneumococci

They felt that Type XIV, which occurred so commonly in infants, had a particular preference and tendency to involve the pleura, meninges and pericardium with greater frequency than many of the other types of pneumococci. Antisera seemed valuable in combating this type of pneumonia in young infants.

These investigators further studied their cases with regard to the importance of the age of the patient and the type of pneumonia on mortality. They confirmed the old idea that bronchopneumonia is at least two or three times as fatal as lobar pneumonia, regardless of the age of the child. They further showed that under the age of two years any type of pneumonia is between two and three times as fatal as it is over the age of two years. To state exactly, their figures showed a mortality rate of 16% in the cases of lobar pneumonia in infants and only 6% mortality rate in lobar pneumonia in older children, while bronchopneumonia in infants showed a mortality rate of 34% and in older children, 14%. Their observations on mortality in relation to the type of pneumococcus were interesting and confirmed the opinion that the mortality rate was usually much higher for the same type of infection in infants under two years of age than over two. For example, Type I pneumonias under two years showed a mortality of 23%, while Type I infections over two years of age showed a mortality rate of only 4½%.

invade the blood stream more frequently, and in any of the bacteremic cases of whatever type, the death rate is always high, whereas in non-bacteremic cases it is usually low. Usually the blood stream is invaded between the third and fourth days in Types I and II, but it may be invaded late in the disease.

There are certain requisites, however, which we must bear in mind to obviate the most favorable use of sera. Early treatment is exceedingly advisable, and by early we mean treatment within the first twenty-four to thirty-six hours. Cecil[7] has shown that with Type I infections the mortality rate is only about 5% if serum is given adequately within the first twenty-four hours, which is about one-sixth of the usual death rate if the patient is not treated. Secondly, the amount of serum per dose should be adequate, usually from 100,000 to 200,000 units in a given case, but a greater amount should be given in those severely ill or those with septicemia. It is further wise to permit only a short interval of two to four hours between the administration of serum dosages. We must not forget that it is never too late to treat a patient with serum, particularly if that patient still shows a positive blood culture.

REASON FOR FAILURE OF SERUM

In some cases the severity of infection and the presence of complications may be too great at the time the serum is given for favorable results. The presence of empyema greatly lessens the influence of serum because its presence no doubt is evidence of an overwhelming infection early in the disease. If there has been a mistake in typing, naturally one would not expect valuable results from serum, and we find patients who probably because of the overwhelming nature of their infection react poorly as far as their hematologic response is concerned, and exhibit a leukopenia throughout the infection and incidentally a very high mortality rate. The late usage with insufficient dosage is also a common fault. The rare occurrence of severe allergic manifestations may at times necessitate no further usage of serum.

Giving too little serum is folly and wastes not only life but serum. We must not adhere strictly to the common idea that serum does no good after the first three days, because it may do good at any time, particularly if a bacteremia is still present. The longer one waits in giving serum, the greater the expense to the patient, because the greater amount of serum will be required. There is only about one chance in three hundred for a severe serum reaction, and one in four for death without.

Recently commercial companies have begun the production of rabbit serum in the treatment of pneumonia. The chief advantage of the rabbit serum seems to be that it is considered cheaper than horse serum and a very high titer can be obtained, especially for Type III and for types against which it has been impossible to prepare potent horse sera. The chief objection to it seems to be that chills occur with considerable frequency after its use. It has been found that giving patients aspirin just before the serum is administered will frequently lessen the severity and duration of the chill.

TRANSFUSIONS

There is only one other point which I wish to discuss in the treatment of pneumonia in childhood, other than what has already been said about the use of specific antisera, and that has to do with the administration of transfusions in cases of pneumonia. It is no doubt true that in the usual case of pneumonia, blood transfusions are not indicated. However, in many of the smaller children which one sees in a general pediatrical service, particularly in the poorer class of people where standards of nutrition have not been adequately maintained, one frequently notes the association of marked anemia. In these conditions, it has long been my practice to give transfusions, and also in certain cases of pneumococcic pneumonia which are alarmingly toxic or in shock. I have further used transfusions in those cases of so-called unresolved or chronic pneumonias of long duration. In these cases the results obtained are often striking. There used to be an old idea that any administration of intravenous fluids was dangerous in pneumonia for fear of overloading a myocardium which was probably already overtaxed by the accompanying pneumonia. Physiology, however, does not confirm the fact that the heart can be easily overtaxed. Normal dogs have been given 25% to 100% of their total blood volume with no increase in the diastolic size of the heart. The capillaries and venules act as reservoirs for this excess fluid. Arena,[8] writing

from Duke University, recently reviewed their experience with transfusions given to pneumonia patients whether anemia was present or not. They observed twenty-four cases, using twenty-five for controls. The blood studies were about the same in each series. In fifteen cases the temperature fell by crisis within twenty-four hours, and the disease semed to be definitely shortened in all cases by about two days. The severe dyspnea and cyanosis were often improved and the mortality rate was also lowered. The reasons for improvement in such cases seem uncertain. The improvement is not merely due to lessening of the anemia. It may be true that blood so given stimulates the production of segmented polymorphonuclear cells. Hemogram studies in their cases showed an increase in segmented cells and a decrease in non-segmented forms at the time of crisis. It is, of course, probably true that with the blood one introduces neutralizing antibodies of some non-specific protein reaction.

SULFAPYRIDINE

Present reports in the literature seem to indicate that we are at the dawn of a new era in the treatment of pneumococcic infections in general. This optimism is possible because of the development of a derivative of sulfanilamide, namely, sulfapyridine, commonly known as M and B 693, or Dagenan, proposed by the British chemist, Whitby[9] in May, 1938. Flippin and Pepper[10] were the first in America to report on the use of this drug in pneumonia, using it in four adult cases of pneumococcic origin, all of which recovered promptly. They[11] have since reported its use in one hundred typed cases of pneumococcic pneumonia, nearly all of which were adults, with only four deaths, three of which were Type III infections. There were no deaths in twenty-six cases of Type I infection. Hartmann[12] and his associates at the St. Louis Children's Hospital have reported the most extensive use of the drug in the pneumonias of childhood. Eighty cases of different types of pneumococcic infections, with forty cases definitely proved to be pneumonia, confirmed by x-ray and fluoroscopic examination, a few complicated by empyema and several cases of pneumococcic peritonitis, with three cases of pneumococcic meningitis were included in their report. They carried out studies of the sulfapyridine content of the blood, blood counts and determination of the methemoglobin in these cases. The most striking observation in the cases of pneumonia was the quick drop of temperature to normal in twenty-four to thirty-six hours in practically every case. Several cases of bronchitis, which were assumed to be of pneumococcic origin, were also dramatically improved. In the instances of pneumococcic peritonitis associated with nephrosis the results were likewise striking. In the total series of forty cases of pneumonia, there were but three fatal cases, two of which were in infants with bronchopneumonia which was proved to not be of pneumococcic origin, and one death in an older child with severe laryngo-tracheitis who died twelve hours after treatment was begun. The types of pneumococci isolated from their cases were I, IV, VI, XI and XIV. Two out of three cases of pneumococcic meningitis recovered. No effect was observed in staphylococcic infections, dysenteries and influential meningitis. These authors felt the favorable reports concerning the use of the drug in adults, should prompt its early use in suspected or proven pneumococcic infections in childhood.

MacColl[13] at Duke University has recently reported the use of the drug in thirty-three instances in children, thirteen of the cases being pneumococcal infections and all of which recovered completely. The drug was used in eight cases of staphylococcus aureus infection with no particular benefit.

Hodes[14] and coworkers have reported the use of sulfapyridine in seventy-one cases of pneumococcic pneumonias, forty-three of which were of primary origin and thirty-eight cases wherein the pneumonia was associated with measles, all of which recovered. Only patients who showed consolidation by x-ray and identifiable pneumococci from the nasopharynx were studied. Pneumococci were cultured from the blood in only five cases in the series of seventy-one. The clinical response following sulfapyridine was similar in all age groups, and seemed to be as definite in those children with pneumonia associated with measles as in their cases of primary pneumonia. No significant untoward effects were noted except five instances of mild granulocytopenia and two cases of hematuria, with prompt disappearance of much ill effects on cessation of the drug.

The use of sulfapyridine in the treatment of

pneumonia in childhood has further been studied by Wilson[15] and his coworkers in Cincinnati. These investigators studied two groups of children, thirty-five in each group, which were comparable as to age, the duration of pneumonia and its severity at the time of admission, one group receiving sulfapyridine and the other only symtomatic treatment. Only one patient in this series had a positive blood culture. The patients receiving sulfapyridine manifested their clinical improvement late in the second hospital day, while those not receiving the drug had on an average of three to four more days of fever and illness than patients treated with sulfapyridine. They considered their series of cases too small to allow any valuation of the effect of the treatment in preventing complications. Two patients receiving the drug showed no apparent effect, even though adequate blood levels were maintained. In another instance they were unable to note any effect of the drug in a case wherein the blood level of the drug could not be maintained continuously above 2 mg. per 100 cc. Three patients had relapses which responded to subsequent administration of the drug. No severe complications were encountered. These observers feel that a dosage of the drug which secures a level of approximately 4 mg. per 100 cc. of free sulfapyridine in the blood is an adequate dosage. This dosage seems to be maintained by giving 1 to 1½ grains per pound body weight per twenty-four hours.

It is only natural that some derivative of sulfanilamide would be investigated for the combating of pneumococcic infections, since we are all familiar with the marked effect which that drug has upon beta hemolytic streptococcic, meningococcic and gonococcic infections. In fact, several investigators have felt that sulfanilamide itself would act upon the pneumococcus, but that its effect was notably lower than its effect on hemolytic streptococci. I have observed a continuance of the life of a child with pneumococcic meningitis beyond the expected period of two or three days by the use of sulfanilamide. Many bacteriologists have noted a marked similarity between the pneumococcus and hemolytic streptococcus, and noted that the immune reaction developing in diseases due to infections by either of these organisms was similar. Therefore, any drug which could be experimentally shown to elevate the bacteriocidal power of the blood, as well as the bacteriostatic of the serum against the pneumococcus would be expected to bring about a response in the body similar to that seen in cases of hemlytic streptococcus infections treated by sulfanilamide. Sulfapyridine seems to be the drug which is capable of producing just such a response in cases of pneumococcic infections.

The mechanism by which the drug works is probably that of being a bacteriostatic agent. We know that recovery from pneumonia depends largely on the development of anti-bodies, particularly at the time of the crisis. Sulfapyridine seems able to inhibit the spread of infection, but if no immunity response develops, there may be a recurrence of symptoms. Herein lies one of the greatest uses of specific anti-sera, the use of which may turn the tide toward recovery, hence it is necessary to know the type specificity of the infecting pneumococcus even when using sulfapyridine. The drug presents certain advantages over serum therapy in that its use lessens the necessity for typing and the identification of the organism, and thereby may spare the patient from the discomfort of procedure necessary in obtaining material for typing. Valuable time may also be lost by waiting to inaugurate therapy while one ascertains the specific type of pneumococcus. More than one type may be present, which confuses one as to the type of serum to use. I feel, however, that one should not adopt the policy of failing to investigate the sputum of the child who has pneumonia just because one is using sulfapyridine. Organisms other than the pneumococcus cause pneumonia, and in most of these instances sulfapyridine would probably not be of any value. The use of the drug also eliminates the risk attached to serum therapy and, furthermore, it affords the child rest when needed most because of the simplicity with which it can be administered. All of these disadvantages are overcome by the use of sulfapyridine.

Unfortunately, there are a few dangers attendant to the use of this drug, most of which seem to be rather insignificant, however, as far as its usage is concerned in childhood. Probably the commonest reaction noted is that of nausea and vomiting, but the newer use of the drug by rectum will probably lessen that phenomena. Cyanosis may be quite evident, but rarely is sufficiently important to necessitate stoppage of

the drug. If one is interested in knowing whether the cyanosis is due to the drug or to pulmonary or cardiac involvement, the intravenous use of methylene blue will aid in such differentiation, the cyanosis being lessened thereby if due to the drug. Like any drug which contains an amine radical attached to the benzene ring, we must watch for the toxic effects on the blood and blood-forming organs, the usual developments being either a hemolytic anemia or agranulocytosis. Both of these developments, however, seem to have been exceedingly rare in the cases reported to date. Hematuria may also occasionally occur.

Enthused by these reports, the author has administered the drug to fifteen children in the past three months, all of which were pneumococcic pneumonias, clinically and by x-ray, with type specific sputum. The response has been dramatic in each instance and no deaths resulted nor any complications. The drug was given by mouth, crushed in milk or fruit juice, in dosages of .2 gram per kilogram. There were no noticeable reactions and little or no vomiting. Cyanosis of a mild degree developed in several cases, but in no instance requiring methylene blue intravenously. No skin rashes or blood changes were noted.

I feel that if no improvement occurs within thirty-six to forty-eight hours, one must consider such a definite non-response to the drug as indicative of other etiology, or overwhelming infection, or failure of proper blood concentration. The advisability of using anti-serum in a proven type specific pneumococcic infection exists in such instances. Certainly, this drug seems to hold promise of being the most notable achievement of our therapeutic armamentarium for pneumonia. Its complete field of clinical usefulness remains to be seen. It may be that the eventual recommended treatment will consist of a combination of this drug and a specific serum. We must not lose sight of the fact that most therapeutic discoveries are originally hailed with enthusiasm and may later be followed into discard. We must remember also that the use of specific serum has given consistently, favorable clinical results in pneumonia when administered in good hands. There are so many factors which alter the end-result in a disease-like pneumonia that it will necessitate the observation of thousands of carefully controlled cases with particular study as to comparative etiology, clinical types, bacteremia and seasonal virulence of the infecting agent before we can completely evaluate the clinical worth of this new therapeutic agent. Careful analysis of most of the reported series of childhood pneumonias treated with the drug shows a rather striking low incidence of bacteremia or complications, with practically no mortality in cases treated the past year with or without the drug. This would seem to indicate that our current pneumonia season was not a virulent one. It is my own feeling, however, that we are at the threshhold of a new era in the successful treatment of pneumococcic infections, not only in children and infants, but in adults as well.

To me, the final outcome in any given case of pneumonia in childhood depends in its last analysis upon the age of the child, the type of infecting organism, the clinical type of pneumonia produced, the presence or absence of positive blood cultures, the body response as shown by the leucocytic picture, and the ability of the clinician to detect early and treat rationally any of the complications having already initiated a carefully supervised administration of sulfapyridine in the pneumococcic and streptococcic types, but remaining ready to use and always mindful of the potential value of specific antisera in those pneumococcic pneumonias not responding in the accepted fashion after the preliminary use of sulfapyridine.

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Dr. Douglas Boyd (Highland Park): Are any fatalities reported from the use of sulfapyridine?

Dr. William C. Fox, Chicago: I would like to ask Dr. Whitaker whether he thinks the failure to type pneumococci, after the use of sulfapyridine treatment, may not be the result of the static effect of sulfapyridine.

Dr. Whitaker (Closing the discussion): In regard to the question as to whether there have been any fatalities following the use of sulfapyridine, I can only answer from my knowledge of the use of this drug in cases of pneumococcic infections in children.

Dr. Hartmann of St. Louis reported one of the earliest series in this country, using the drug in some eighty casse of pneumococcic infection, including about forty cases all of which were children with definite pneumococcic pneumonia, two or three instances of pneumococcic meningitis, and also in several cases of nephrosis associated with peritonitis with recovery. In this particular study, there was one instance of severe granulocytopenia, which was, however, associated with a septic process and there was an improvement in the blood picture following cessation of the drug, although the child died apparently from the septic complication. To my knowledge, I have encountered no case in pediatrical literature wherein the death was directely attributable to the use of the drug. I think all of us agree that with the ordinary precaution of watching the blood count every two or three days, severe or fatal granulocytopenia is not likely to occur.

In regard to the question about the loss of type specificity, it has been my experience to observe it in one or two instances. Many investigators have reported it as happening. The action of the drug seems to definitely decrease the growth or multiplication of the pneumococcus by its bacteriostatic effect. We know that the type specificity of the pneumococcus depends upon the capsular substances, and sulfapyridine seems to alter this portion of the organism, thereby making possible a loss of type specificity. Naturally, if the organism is still cultured from the blood stream after the use of the drug, being in pure culture and probably in excessive numbers, I think it is quite likely, as mentioned by one of the discussants, that type specificity would not be lost. It may be that the difficulty in detecting the type in the sputum after the use of the drug is due to an actual decrease in the number or organisms present.

DISSEMINATION AND CONTROL OF BACILLARY DYSENTERY*

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Bacillary dysentery presents a far more serious problem at present than typhoid fever and, because of characteristics peculiar to the disease, its epidemiology is less susceptible to proof. Flexner and Sweet[1] in 1906 demonstrated the course pursued in the absorption of the toxin, excretion through the wall of the large bowel, reabsorption and the function performed by the liver and bile in the maintenance of this vicious circle. In feeding experiments upon rhesus monkeys, Preston and Clark[2] in 1938 succeeded in producing a typical bacillary syndrome bacteriologically, pathologically, and clinically analagous to that of the human.

Since 1922 animal experiments in epidemiology have been carried out by English and American investigators.[3] Among their conclusions the following are worthy of comment:

1st: A steady circulation of susceptibles is a more powerful factor in favoring the epidemic spread of disease than the total number of animals exposed.

2nd: There is no tangible evidence of change in the virulence of the organism in the pre-epidemic, post-epidemic or inter-epidemic periods.

3rd: Epidemic strains tend to kill but not to persist in survivors or spread to contacts; but endemic strains may exhibit the reverse behavior.

4th: The dosage of pathogenic organisms may affect the severity of attack.

It is apparent that bacillary dysentery is produced by the ingestion of the organism and in the human is a hand-to-mouth phenomenon. Because of conditions exacted in an animal study

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Read before Section on Public Health & Hygiene of Ill. State Med. Soc., May 3, 1939, Rockford.

the results are not comparable to a human epidemic. Variable human and physical factors in a community strongly influence the trend of epidemic bacillary disease. Due to difficulties in bacteriological technic marked discrepancy exists, so that accurate evaluation of the factors implicated in the development and termination of an epidemic is almost impossible.

Deductions in most instances must be presumptive and based on the sequence of events in the spread of disease. Conclusive evidence, in which cause and effect can be unequivocally proved and attributed to one common source and organism, is very uncommon in bacillary dysentery.

FACTORS INVOLVED IN DISSEMINATION

Incidence: Shiga[4] hoped the dysentery problem would be solved soon after his discovery of the organism (1898), which led to immediate adoption of public health measures for its control and eradication. The reduction in the incidence of the Shiga type of dysentery in Japan was followed by an increase in the prevalence of "meta" and "para" dysentery. The literature is replete with reports of epidemics of bacillary dysentery from all parts of the world and practically every section of the United States. A number pertain to epidemics of enteric disease of unknown etiology, although some form of dysentery was usually suspected. Boardman[5] states that from a physician's standpoint it is certainly a challenge to modern medicine that a condition approaching epidemic proportions is so frequently unexplained. Carter[6] concurs with Matt and Durham, who emphasized the difficulties in recognizing bacillary dysentery because of the mildness of symptoms and its rarity as a result of sanitation. Despite investigations which have shown conclusively that the disease is neither rare nor always mild, this same opinion is held today by many physicians. Many cases, especially the symptomless or mild, remain undiagnosed. Add to this factor, modern means of transportation plus constant shifting of the population and the result is a widespread incidence in endemic or epidemic form.

Carriers: The organisms of bacillary dysentery are excreted in feces, though it is interesting to note that the organism has been recovered in blood culture by Haynes[7] and from bile at autopsy by Nichols.[8]

A simple classification of carriers as convalescent, chronic and symptomless or contact types is descriptive. In this connection, we must include the food handler because of his pertinent relationship to the entire problem of dissemination. He may be found in any one of the three groups and can easily become the vital factor producing an explosive outbreak in any endemic environment. Gay[9] states that carriers of this disease have not been as systematically investigated as carriers of the typhoid bacillus, but is certain that so-called healthy carriers exist, as well as recovered ones. Felsen[10] does not believe there are any healthy carriers. In our series four such carriers, including one employee, were found on bateriologic examination. They all denied ever having had an attack of diarrhea and never presented any symptoms or findings on repeated sigmoidoscopic examinations during a protracted period of isolation in the dysentery ward.

In an intensive cultural study of 44 cases at the Dixon State Hospital, including acute, chronic and convalescent patients, 28.04% were found to be harboring Shigella organisms. The duration of illness in this series of positive cases varied from 1 day to 11 months and in one case was unknown. One patient had had diarrhea for two months at a time five years previous to examination; subsequently she had been without symptoms, but proctologic examination revealed positive findings. A control study of supposedly healthy patients showed an incidence of 5.4% positive cases. Employees in a representative group studied appeared to be singularly free from organisms; but we considered it expedient to isolate five, who disclosed proctologic findings of acute or chronic dysentery. It seems logical to regard every case of dysentery a possible carrier in any stage of the disease.

Carriers may be found in any community, but particularly in institutions because of new admissions. Only cultural findings reveal the healthy (contact) carriers if, and when, the organisms can be recovered. Proctoscopic examinations are more reliable than negative bacteriologic findings in the detection of chronic and convalescent, so-called obvious carriers. Routine proctologic examinations of all patients on admission to the Dixon State Hospital from January, 1937, to January, 1939, led to immediate isolation of 3.4%. Similarly, 0.8% were isolated on admis-

sion to Elgin State Hospital. It is to be emphasized that as a source of infection these patients had been as great a menace to the community from which they originated as they are now to the institution.

In our experience in endemic and epidemic periods, carriers become an issue only when other corresponding agents in dissemination are not controlled. Conversely they may become obstacles to complete eradication of bacillary dysentery.

Modes of Transmission: Dysentery organisms can be conveyed by innumerable means through devious paths to any part of a community, home or institution. We have compiled eighteen possibilities of transmission, divided into three groups in order of their importance in dissemination. Many were disclosed in the course of our surveys at the institutions, though not actually proved.

Proved Means	Suspicious Means
Milk	Food containers
Water	Utensils
Food	Swimming pools
Defective Plumbing	Soil
Ice	Domestic animals
Flies	Rats
Fomites	Vermin

Contributing Causes
- Overcrowding
- Uncleanliness
- Climatic conditions
- Geographical locations

Means of transmission can be considered proved only if there is conclusive evidence of contamination or pollution with organisms identical with those recovered from patients. Bowes,[11] Fyfe[12] and Wiseman[13] report proof of milk-borne epidemics; Carter[6] traced one to ice cream; Stanley et al.[14] to bread; Singer[15] to ice; and Gibbons[16] to flies. Miller[17] was so impressed by the rapidity with which an epidemic spread that he was tempted to believe it was actually "airborne." Boardman[5] considers defective plumbing an extreme hazard and even modern installations often undependable. McDaniels, Burton and Arnold[18] reported an outbreak of amebic dysentery directly traceable to lack of siphon breakers in "flush-o-meter" valve type of toilets. In a nursery building in one of our institutions we demonstrated back siphonage in the same type of plumbing. Another possible source of contamination is the custom, recently discovered, of preparing feedings in the nursery kitchen for children in the isolation ward and transporting bottles back and forth for that purpose. Russell, in discussing Shiga's[4] paper, stated that we must come to a realization that the prevention and eradication of enteric diseases are in part matters of sanitary engineering.

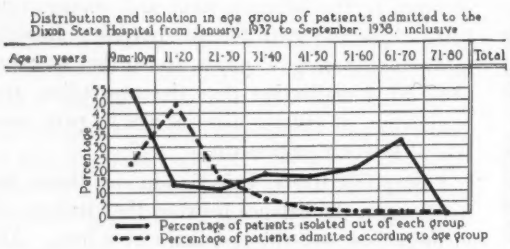
Susceptible Hosts: Infection in any disease depends upon the balance between the virulence of an organism and the resistance of a host. Age and physical condition exert a decided influence upon the susceptibility of an individual to bacillary dysentery.

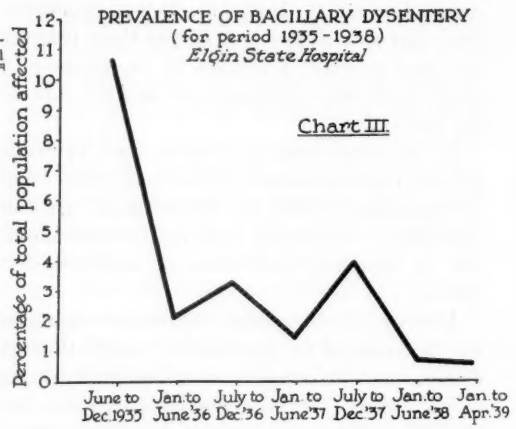
In an analysis of 231 cases observed at Dixon State Hospital among the 1,017 patients admitted from January, 1937, to September, 1938, very distinct comparisons can be made in susceptibility of various age groups. (See Table and Chart No. 1.) This chart depicts the high incidence in the 1-10 year age group; a sudden drop, with the 21-30 year period as the most resistant, and a gradual rise to a point, in the 61-70 year group, almost equal to the previous peak. The susceptibility in the tender age is exceedingly high and distinctly out of proportion to the number of susceptible hosts in other age groups. Infants and children are particularly susceptible because of lack of resistance as well as lack of anatomical differences between the large and small bowel. The percentage of susceptible hosts appears not to be the determining factor in the incidence in institutions, since the admissions maintain a continuous supply of susceptibles. Despite this, it is possible to prevent the development of new cases even in the presence of carriers. Individual disposition plays a significant role in the response of those exposed to infection. This is clearly indicated by the number of individuals in the various groups who have not become afflicted, even though subject

TABLE 1

Distribution and Isolation in Age Groups of Patients Admitted to the Dixon State Hospital from January, 1937, to September, 1938, Inclusive

Age, in Years	Number Admitted	Per Cent. Total Admissions	Number Isolated	Per Cent. Age Group Isolated
9 mos.- 10 yrs.	229	22.51	126	55.02
11-20	491	48.27	73	14.86
21-30	153	15.04	18	11.76
31-40	79	7.76	15	18.98
41-50	37	3.63	6	16.21
51-60	20	1.96	4	20.00
61-70	6	0.59	2	33.30
71-80	2	0.19	0	0.00
Total	1017		244	23.99





to the same possibilities of infection. There is no doubt that natural ability to ward off disease exists, but it is probably controlled by external and internal agencies. Natural or acquired immunity, physical and mental development, diet and care received prior to admission, etc., partially explain the phenomenon. Certainly, the large percentage of cases, which recur from time to time, frequently in the same individuals suggests that immunity when acquired is only transient and that the individual either contracts the disease anew or that a latent source of infection in the bowel or gall bladder becomes active.

Mechanism of Dissemination: Even in typhoid fever many possible means of transmission cannot be proved bacteriologically, but by inference and experience we recognize their potential danger. Utilizing the same presumptive evidence and basing our deduction on experience in two large epidemics in two different institutions, we suggest that three correlated factors are implicated in dissemination:

1. The source; any individual who harbors and excretes dysentery organisms, including acute, convalescent and chronic cases and healthy carriers. Food handlers must always be borne in mind.

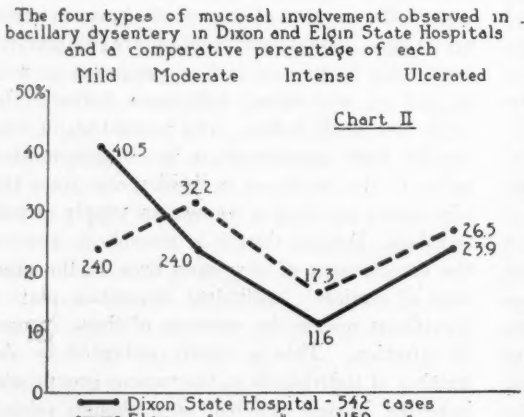
2. The avenues of transmission; any possibility, either proved or suspicious.

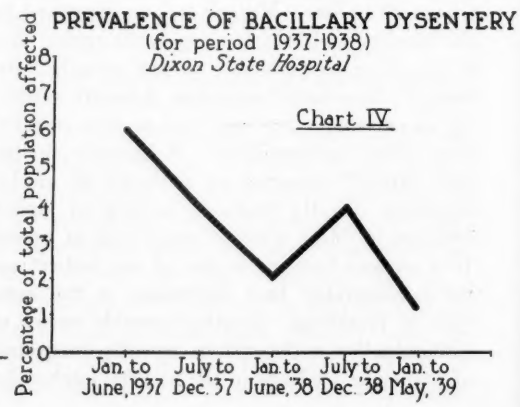
3. The available host; one whose susceptibility is influenced by many intrinsic and extrinsic factors.

Whether the incidence of disease will be of sporadic, endemic, pre-epidemic or epidemic proportions will be determined by the predominating factor:

1. When the source is limited to one acute case or chronic carrier in a restricted environment and the susceptible host becomes infected by direct contact through a single medium of transmission, the likely result is a sporadic case.

2. If the source is multiple and the means of transmission limited, but direct contact with a number of susceptible hosts is possible, endemic cases appear.





3. With the same limited means of transmission but with the source in widespread foci and therefore available by direct contact to a greater number of susceptible hosts, a pre-epidemic state occurs.

4. If the foci are numerous and widespread, and the means of transmission increased, there will be contact with a greater number of susceptible hosts, many previously unexposed, and an epidemic results.

5. If to this triad is added a means of rapid distribution through some commonly used medium, such as milk, water, food, ice, etc., an explosive outbreak develops.

Diagnosis: Bateriology. This constitutes the crux of the entire problem. An accurate diagnosis can be made only by recovering the etiologic organisms from the stool. But this seems often to be impossible. From an epidemiologic and bacteriologic point of view much remains to be elucidated; the dysentery organisms in vivo and in vitro appear unusually susceptible even to slight changes in environment. Arnold[19] aptly describes them as being a very unstable and undifferentiated group subject to alteration in morphology, biochemical relation, antigenicity and toxicity. Shiga[4] mentions as many as 100 different strains, Silverman[20] 45 strains, etc. Martin[21] claims the organisms will survive outside of the body and in ice, although easily killed by heat and sunlight; and may survive drying for ten weeks, live in feces 11 days, fomites 49 days and soil one year. Blatt[22] has recovered the organisms from mucus as long as a year later. In the experience of our bacteriologists and others the organism has failed to survive even for brief periods outside the body. A negative bacteriologic examination, therefore, lacks significance because of the intermittent excretion of the organisms and technical problems involved in transportation of specimens and isolation of the organism.

This accounts for the discrepancy obtained in three bacteriologic surveys performed at Dixon and at Elgin State Hospitals. These bacteriologic studies were conducted by the research laboratories of the University of Illinois, the State Department of Public Health and the U. S. Public Health Service. A brief résumé of results may be of some interest.

In the former institution the three studies were performed at three different periods of time. The first consisted of cultural studies made on 2897 proctoscopic swabs from newly admited patients, employees, food handlers, diarrhea suspects, acute and chronic cases. Only eighteen positive cultures for Shigella dysentery, Flexner, were obtained or 0.7%. Specimens taken from 276 patients in isolation yielded only 6.2% positive cultures. A lapse of 24 hours between the collection and the plating of the specimens unquestionably accounts for the small number of positives.

The second study, performed on the premises, on representative portions of the same group, yielded strikingly different results, with 28.5% positive for Shigella dysentery, Flexner type. Another interesting feature of this study is that 46.4% were positive on the first stool examination, 21.4% on the second, and 57.1% on the third. Only one was positive on all three stool cultures and only five on two. A control study of supposedly healthy but apparently contact cases showed an incidence of 5.4%.

The third study, also performed on the premises, and on the same type and group of patients and employees, culminated in the isolation from eight patients of an atypical Flexner organism, giving agglutination with paratyphoid A and B and a number of strains of dysentery. The opinion is that it is an organism which has developed individual characteristics due to its long active life in the Dixon institution.

A similar study consisting exclusively of proctoscopic specimens was made at Elgin State Hospital during three different periods: one epidemic and two post- or inter-epidemic. In two of these studies, where there was a lapse of 24 hours before culturing, only 0.5% were positive. In a recent follow-up study of former dysentery patients the proctoscopic specimens were immediately inoculated on various media. Of the 425 patients thus examined only eight or 1.9% were found to be positive for Shigella dysentery, Flexner.

Serology: Agglutination tests on over 3500 blood specimens taken from all groups of patients in the two institutions and a control group of newly admitted patients have convinced us that they cannot be considered diagnostic, regardless of titre. It is simply confirmatory.

Early recognition of the disease is imperative and cannot be accomplished by employing bacteriologic methods exclusively. Considerable

emphasis must then be placed upon sigmoidoscopic examinations and clinical manifestations.

Clinical: There appear to be four distinct types of bacillary dysentery: symptomless, mild, severe and chronic, but it can simulate many other diseases.

Symptomless Type: These patients are usually discovered in routine examinations or surveys and are entirely symptomless except for proctoscopic evidence of dysentery. Some of these patients may be positive culturally and serologically.

Mild Type: The temperature ranges from normal in most instances to 101°. Abdominal cramps and other systemic symptoms are often barely erceptible. The stools may be liquid, with considerable mucus and blood, or they may be well-formed and the patient constipated. Recovery in a few days is common, but death may occur.

Severe Type: The onset is gradual and insidious or very sudden. The symptoms may be severe malaise, headache, pyrexia (sometimes reaching 107°), nausea, vomiting, excruciating abdominal cramps (often simulating peritonitis), tenesmus and diarrhea. Diarrhea is, as a rule, the outstanding symptom, being irritating and exhausting, with evacuations of liquid, bloody and mucoid stools amounting to 40, 50, or more daily. Toxemia and dehyration are marked. This condition may persist for days, weeks or months. The mortality is much higher in this type.

Chronic Type: The symptoms vary from the mild to the severe, with periods of remission in which complete healing may occur. However, the patients may be emaciated, weak, but afebrile, and have intermittent attacks of diarrhea, with a dark, serous, bloody and offensive stool. The majority eventually recover completely, but about 8% (our series) develop a condition analogous to chronic ulcerative colitis.

Felsen[10] classifies the atypical forms into the appendicular, meningitic, agranulocytoid, afebrile, asymptomatic, constipated and Sonne-Duval types.

The systemic symptoms may not correspond at all to the degree of mucosal involvement. The patient may be completely prostrated, but the bowel only mildly affected; or the mucosa may be severely ulcerated and the patient be apparently well.

Rogers and Megaw[23] state that both the gross and microscopic changes in the bowel are quite distinctive in bacillary dysentery. Felsen[10] finds that in the acute stage the recto-sigmoid is always involved, despite the fact that some patients are not cognizant of the disease. Skinner[24] concludes that the proctoscopic examination will give an accurate picture of the lesions typical of this disease. We have performed approximately thirteen thousand sigmoidoscopic examinations upon dysentery and non-dysentery cases in two institutions, making comparative studies to determine whether or not bacillary dysentery can be diagnosed by direct visualization. In no other condition involving the rectum and sigmoid, excepting perhaps amebiasis, is the appearance of the mucosa similar to that of bacillary dysentery. Because of the accuracy and efficacy of this new method it is indispensable in the diagnosis, management and control of diarrhea.

We have previously described[25] four distinct stages observed sigmoidoscopically, the mild hyperemic, moderate hyperemic, intense hyperemic, and the ulcerated. The latter may be concomitant with any of the other three types. Mild or moderate changes occur early in the disease, may advance no farther, or may gradually progress to the most advanced, even culminating in perforation.

Continuous or repeated infections may produce permanent changes in the bowel wall comparable to our conception of the pathology noted in chronic ulcerative colitis and regional ileitis.

The mild type presents a diffuse hyperemia of the mucosa, which should not be confused with a simple congestion, a condition often observed in the transitional stage. The healing process begins at the distal end of the bowel, the hyperemia at the proximal. In the presence of an unaccounted-for foul liquid stool the patient should be carefully studied for at least 48 hours to determine the nature of the malady.

The moderate type shows diffuse inflammation with the mucosa bright red and edematous and the valves slightly thickened. The stool is liquid and mixed with muco-purulent exudate and occasionally blood streaked. In this type the inflammatory process does not penetrate deeper than the mucosa.

In the intense type, the mucosa is highly inflamed, extremely edematous with areas of petechial hemorrhages. The normal structures

are completely obliterated and the entire wall involved. The stool is liquid, bloody and muco-purulent.

The ulcerated type may appear in any stage of the disease. The lesions vary from pin-point in size to many centimeters in diameter and are usually superficial and covered with a whitish-gray membrane. Or, not infrequently, they may be very deep and penetrating, involving all the coats of the wall and perforating through it. The lumen may be filled with a foul liquid stool mixed with muco-purulent exudate and blood, which sometimes forms a long, thick, dirty gray sheet, tissue-like in consistency. Yet we have frequently observed a formed stool in an ulcerated bowel.

A total of 1701 cases have been observed in two institutions. Note in Chart 2 that there is a slight increase in the prevalence of the mild type at Dixon State Hospital, but the other types appear in about the same proportion in both institutions.

Control: Prophylaxis. Intravenous administration of vaccine freshly prepared from 6-12 strains is considered safe by workers who have used this method on a large scale in a mental hospital in England. Protection is not complete, but there is marked diminution in the number of cases and the severity of the attacks. Oral or rectal vaccines have appeared ineffective in the experience of others and we have had similar results with the former.

Sigmoidoscopy can be easily performed with practically no discomfort on patients of any age or physical condition and requires no anesthetic. It is the logical approach to an early diagnosis and will reveal changes in the bowel mucosa long before any dysentery organisms can be recovered. We make this examination on all patients upon admission, on all cases of diarrhea and on all new employees in the institution. Immediate isolation prevents spread from these sources.

The same precautionary measures adopted for the prevention of typhoid fever should be applied to bacillary dysentery. We have incorporated these fundamentals in our plan, which, even though it may appear formidable, is extremely simple and easily fulfilled. It is is as follows:

1. Periodic inspection of the water, milk and food supply.

2. Periodic inspection of plumbing and correction of defects.

3. Control of flies.

4. Thorough disinfection or steaming of all food containers, utensils, glassware and linens.

5. Provision for adequate isolation quarters equipped with a suitable plumbing system and facilities for disinfection or steaming of food containers before their return to the general kitchen. Provision for the disinfection of all utensils and glassware on every ward; for the proper disposal of garbage and for the disinfection of all linens before being sent to the laundry.

6. Sigmoidoscopic, serologic and bacteriologic examination of all food handlers, whether employees or patients, to exclude carriers. Careful supervision, with emphasis upon the need for cleanliness. No food handler afflicted with or recovered from the disease is permitted to work in the culinary department in any capacity.

7. Immediate report and isolation of every case of diarrhea among patients or employees.

8. Routine sigmoidoscopic and, if possible, bacteriologic examination of every patient admitted, and of every case of diarrhea occurring in the institution, and of every new employee added to the staff.

9. Release from isolation only after three negative sigmoidoscopic examinations one week apart and three consecutive negative cultures if previously positive.

Our experience has been limited to a study of a widespread epidemic in two institutions. The results have been rather striking. The prevalence at Elgin State Hospital (Chart III) has been reduced to about 0.1% of the total population. In the Dixon State Hospital the total population has increased during the period under investigation. Therefore, the number of susceptible hosts is greater and, although the various means of transmission are not entirely controlled, the incidence of the disease has been appreciably reduced and the epidemic completely checked. (Chart IV.)

COMMENT

Bacillary dysentery is at present a more serious problem than typhoid fever, since it is more prevalent and disabling, and has a higher mortality rate. Failure to control its spread is due to many reasons:

1. Physicians are indifferent and skeptical because of the absence of a clear clinical picture and the comparative uncertainty of bacteriologic and serologic methods of diagnosis.

2. This lack of confirmatory evidence leads to neglect of many cases and contributes to the spread of the disease.

3. The public has been insufficiently warned of the dangers of this disease and the ease with which it may be contracted from infected individuals and in swimming pools, camps, resorts, etc.

4. There is a tendency to attribute all cases of diarrhea occurring in adults and especially in infants and children to gastroenteritis or food upset.

Bacillary dysentery is not only a problem for the public health officer, but for every physician, proctologist and sanitary engineer.

SUMMARY

1. The incidence of bacillary dysentery is unquestionably greater in institutions and communities than ordinary methods of examination disclose.

2. Several types of carriers are discussed, all of which are a potential source of infection.

3. Dissemination depends on many correlated factors, some subject to proof, others to suspicion. The incidence of the disease incriminates many unproved factors by its direct relationship to them.

4. Despite a constant supply in institutions of susceptible hosts, it is possible to limit bacillary dysentery to sporadic cases, even though carriers may exist.

5. Sigmoidoscopic and confirmatory bacteriologic examinations are urged to aid in the diagnosis of all cases of diarrhea.

6. Control and elimination of bacillary dysentery will be effected largely through early recognition of this disease and the application of sanitary measures.

185 N. Wabash Ave.

DISCUSSION

Dr. Nell Hirschberg, Chicago: I would like to comment on three or four points that Dr. Block made and one which he did not make, I think is important. First of all, regarding the diagnosis of dysentery in children which Dr. Block did not discuss. In a recent study which has not been published 38 known cases of diarrhea in children were examined over a period of two months in the summer time. The first bacteriologic examinations revealed only three positive bacillary dysentery cases, and repeated additional examinations raised this number to 18 positives. Therefore, I want to stress the importance of repeated bacteriological examinations, even in the absence of perfect cultural methods.

A proctoscopic examination is exceedingly valuable if it aids and abets the weaker diagnostic method of bacteriological examination. The highest incidence of bacteriologic positives which you have seen reported in the literature averages about 12 per cent. It is possible by proctoscopic examination plus bacteriological examination to raise this percentage considerably.

The other point I want to mention is Dr. Block's discussion of the distribution and dissemination of bacillary dysentery which was in his case peculiar to institutions. It is also applicable to a study of dysentery in the general population. I think those of us engaged in public health work will see that the dissemination of bacillary dysentery is really a carrier problem. In this regard I should like to stress one point which he made. If all cases of diarrhea are investigated, and if the general public can be made to see that even simple cases of diarrhea are investigated, the incidence of positive bacillary dysentery cases will be increased, but we will be able to control the problem by isolating these individuals who are now spreading it among our general population.

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COLLOIDAL ALUMINUM HYDROXIDE "CONTINUOUS DRIP" IN THE TREATMENT OF LARGE GASTRIC ULCERS: THE THERAPEUTIC AND DIAGNOSTIC VALUE OF THIS METHOD

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CHICAGO

Even though there is unanimous agreement that gastric ulcers present to the clinician a more serious therapeutic problem than do duodenal ulcers, there is no such agreement in regard to the type of treatment of ulcers of the stomach. This divergence of opinion is even more marked in regard to large gastric ulcers, as in these the fear of malignancy frequently prejudices judgment.

It is not within the scope of this brief report to discuss the very complicated and controversial question of the benignity or malignancy of large gastric ulcers. Suffice it to state that after many years' study of large gastric ulcers, we cannot confirm the hypothesis promulgated some years ago, that all gastric ulcers of 2½ cm. or above are malignant. The experience in our clinic has been that the size of the crater does not indicate the nature of the lesion, and that in patients possessing such lesions the so-called differential diagnostic points between a benign and malignant ulcer are usually obliterated or hardly noticeable. Cases in which there is a large niche on the lesser curvature but which show some signs of carcinoma, e.g., filling defects, are not included here.

Even though we have had highly satisfying results in our management of large gastric ulcers, nevertheless we look at every one of them as a potential gastric carcinoma, and consider the decision as to their treatment of great importance. We must sympathize with the clinician who is confronted with a patient having a large gastric ulcer, because of the gravity of the therapeutic problem involved. Shall each patient with a large gastric ulcer be operated on, or shall he be treated medically, are obviously questions which go through one's mind. Neither of these questions can be answered at the beginning in the affirmative, because the correct ultimate management of this type of patient depends on his response to the immediate treatment.

In keeping with the management of such patients in other clinics, as the Lahey, etc., it has been our routine to postpone the final decision as to our ultimate treatment of large gastric ulcers for about three or four weeks. During these three weeks of observation in which the patient undergoes intensive treatment, we look for certain criteria of improvement which are generally accepted as signs of benignity. Briefly, these are: (a) clinical improvement with loss of pain and gain of weight, (b) disappearance of occult blood from the stool, and (c) marked decrease in the size of the niche. If these signs appear, we recommend medical treatment under close supervision. If they do not, surgery is indicated.

Since the effect of the immediately instituted treatment is of such diagnostic and prognostic importance, it is obvious that this observation therapy must be carefully planned and executed. A strict Sippy management with medication and milk each half hour on the hour, plus several

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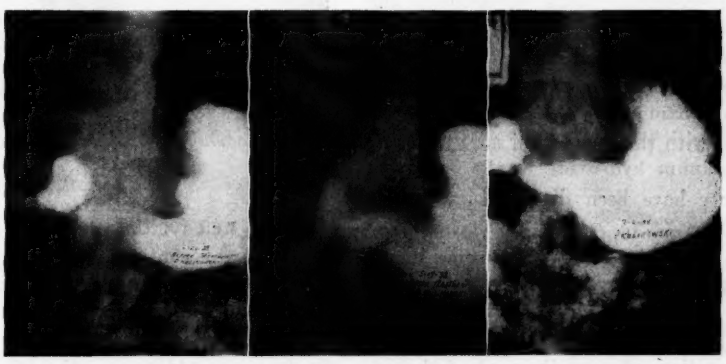
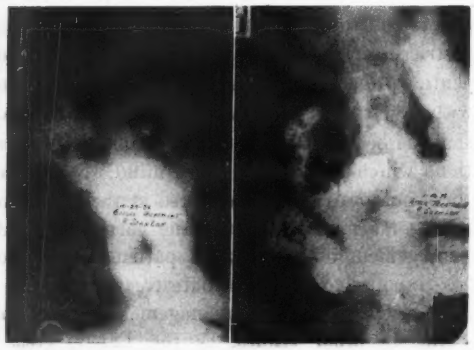
The colloidal aluminum hydroxide used in this study appears under the trade name of creamalin. It was furnished by the Alba Pharmaceutical Company, Inc.

From the Cook County Hospital Medical Service of Drs. Strauss and Foley, and from the Department of Medicine, College of Medicine, University of Illinois.



CASE No. 1

additional feedings of soft food might be considered sufficiently intensive treatment. Unfortunately, however, the personal interest of the patient is too great a factor in such a regimen, so that frequently, especially in instances where the



CASE No. 2

patient is unintelligent and poorly cooperative, the above regimen is not carried out to the fullest extent. It is natural therefore to suppose that any regimen which will give the patient the necessary intensive treatment, without depending too greatly on the patient's cooperation, will be of definite value both from the therapeutic and the diagnostic point of view.

The use of aluminum hydroxide in the treatment of peptic ulcer is comparatively of recent origin. Crohn of New York described it first in 1929. The first report of a series of cases treated with powdered aluminum hydroxide appeared in 1932.[1] Later it was found that a colloidal preparation of aluminum hydroxide was of greater therapeutic value than the powder. A number of authors[2] have reported cases treated with such a preparation which showed definite and rapid improvement both subjectively and objectively. The latest improvement in the aluminum hydroxide treatment of peptic ulcer consisted in the introduction of the continuous aluminum hydroxide drip. The beneficial results obtained with this method of administering colloidal aluminum hydroxide in the treatment of peptic ulcer have been discussed by Emery and others.[3]

Having in mind the necessity of some immediate intensive medical regimen in cases of large gastric ulcer as outlined above, and being aware of the difficulties met in such a regimen because of poor cooperation, etc., on the part of the patient, we were especially attracted to the reports on the use of the continuous aluminum hydroxide drip method. It immediately occurred to us that if this method could be applied to large gastric ulcers, it would not only be of therapeutic value but also of diagnostic importance, as it would demonstrate whether the lesion would heal under the most favorable conditions, and thus prove its character as being either benign or malignant. This regimen then as given in the form described below has lately been used in some of the medical services of the Cook County Hospital, and forms the basis of our report.

In this study we proceeded as follows: As soon as the diagnosis of gastric ulcer was confirmed by the x-ray, the patient was put to bed and placed on a two-hour schedule of a bland, soft diet. A Woldman tube was introduced into the stomach and connected with a Creamalin drip apparatus. The solution dripping through the tube was made up of a 25 per cent. colloidal aluminum hydroxide mixture. The rate of flow varied from 15-20 drops per minute. The patient received on the average from 2,000-2,500 cc. of this mixture in 24 hours. Permission was given to disconnect the tube whenever the patient had to leave the bed.

With the exception of some initial gagging, or even vomiting, which necessitated the introduction of a new tube, the patients showed no signs of irritation and tolerated this soft latex

CASE No. 3

tube very well for the length of time used. The length of the continuous drip treatment varied from seven to ten days. After this time the tube was removed, and the patient was given two teaspoonfuls of the medication every two hours, for six doses, in addition to the other dietary regi-

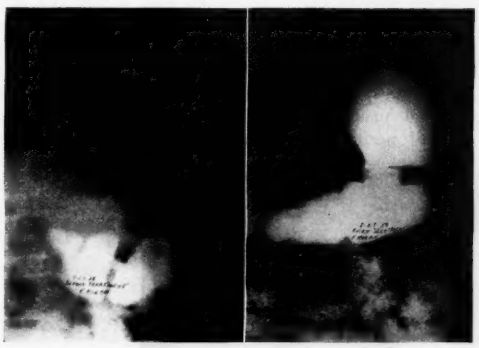
men. X-rays of the stomach were taken shortly after finishing the continuous drip treatment, and then again at various intervals—usually one month or longer—while under observation, in order to check the progression or regression of the disease, i.e., recession or non-recession of the niche. The differences in the size of the crater were measured. Depending on the amount of decrease in the size and change in appearance of the lesion, we were able to decide with more assurance what type of treatment was most suited to a particular case.

CASE No. 4

DISCUSSION

The results of an intensive regimen with the colloidal aluminum hydroxide in the treatment of large gastric ulcers were very striking. Invariably there occurred a marked subjective improvement within 24-48 hours after the institution of the treatment. Furthermore, the difference in the appearance of the ulcer crater before and after treatment was quite striking, as can be seen from the various x-ray pictures. Not only was there a marked diminution in the size of the crater, but many of them who prior to the treatment had showed ragged, indistinct margins, presented sharply outlined, smooth edges after the seven to ten day period of the drip treatment. In five cases hardly a sign of any crater could be found six to 12 weeks after the first x-ray was taken, a fact which, too, would speak for the benign character of the lesion. There were no untoward results from this therapy except for some constipation which was relieved by a daily dose of mineral oil or sweet cascara.

In most of our cases the character of the lesion, whether it was benign or malignant, was very uncertain, and in more than 50 per cent. a malignant condition was suspected. The regimen we have outlined, by which the patient was kept under continuous intensive treatment, proved in these cases to be of remarkable efficacy. The prompt disappearance of the subjective symptoms and the marked decrease in the size of the crater were, to say the least, quite im-



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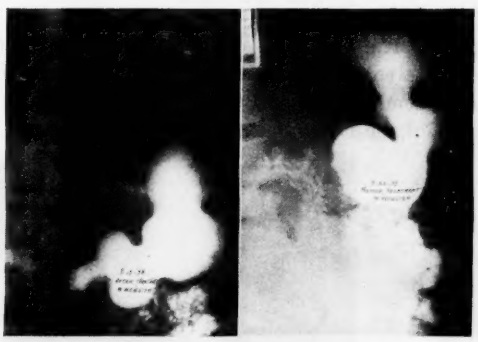
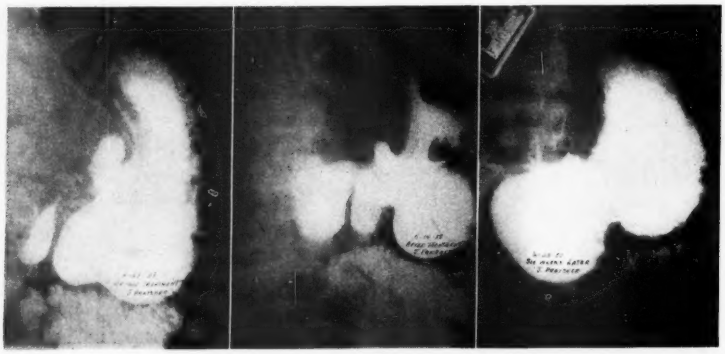


CASE No. 6

pressive. These results, however, were of value not only from the therapeutic but also from the diagnostic point of view, inasmuch as any lesion that responds so promptly and so markedly to any form of treatment, must be benign in character. The course to date in the majority of cases, even though followed for a short time only, sems to support our preliminary impressions of the benignity of these lesions.

SUMMARY

1. The clinical progress and roentgenologic course of twelve patients with large gastric ulcers who were treated by the continuous aluminum hydroxide drip are discussed.



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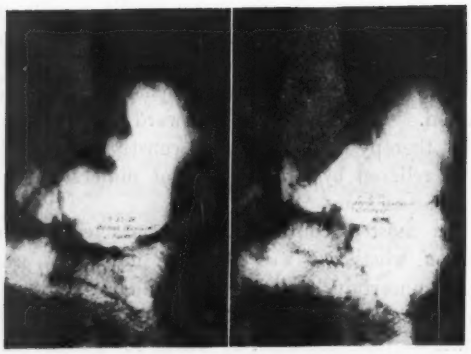


CASE No. 8

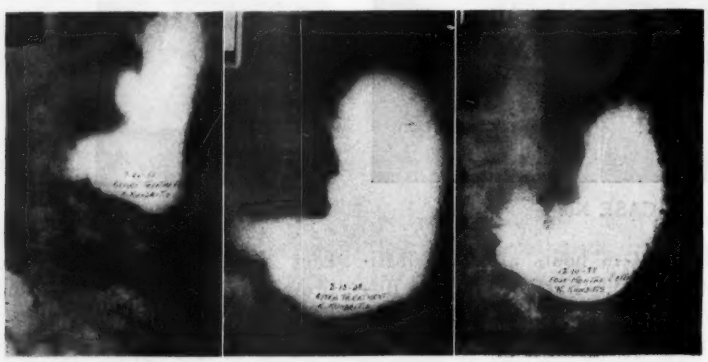
2. The favorable therapeutic results and the diagnostic and prognostic value thereof is stressed.

3. This method of treatment is suggested as a valuable "therapeutic test" in cases presenting large niches on the lesser curvature of the stomach.

55 East Washington St.

CASE HISTORIES

Case No. 1. P. K., Male, aged 73. The patient had periodic epigastric distress for four years. This pain would occur 1-1½ hours after meals and be relieved by alkali and occasionally by emesis. Admitted to the hospital first in April 1938, and was discharged four weeks later as improved. Readmitted in July 1938, and in October with slight exacerbation of symptoms improving slightly each time. Readmitted in December 1938 with symptoms of a perforated peptic ulcer, was operated upon, but died several days later of generalized peritonitis. Maximum acidity was 64 units

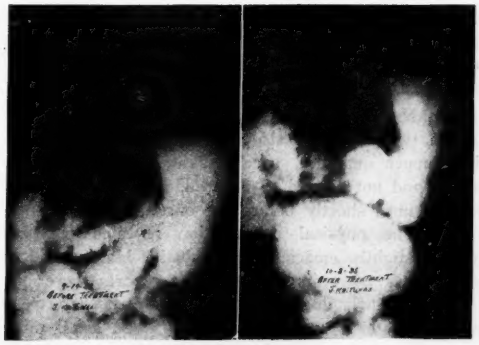


CASE No. 9

free. The roentgenologic data follow: 4/21/38—Large penetrating gastric ulcer 18 mm. deep and 26 mm. wide. On 5/17/38 the ulcer was 12 mm. deep and 18 mm. wide; while on 7/6/38 the lesion was 5 mm. deep and 15 mm. wide.

Case No. 2. P. S., Male, aged 52. The patient entered the hospital with a history of intermittent epigastric distress of two years' duration. This distress became worse in the past three weeks and responded only a little to food and medication. Maximum free acidity was 38. The patient improved but the ulcer was not completely healed when the patient left the hospital. The roentgenologic data are: on 10/29/38—large ulcer on the lesser curvature of the stomach 32 mm. deep and 20 mm. wide, strongly indicative of a gastric malignancy. On 11/13/38—large niche on the lesser curvature of the pars media 10 mm. deep and 18 mm. wide, diagnostic of a gastric ulcer. The patient has been getting along well without any gastric symptoms since his discharge from the hospital.

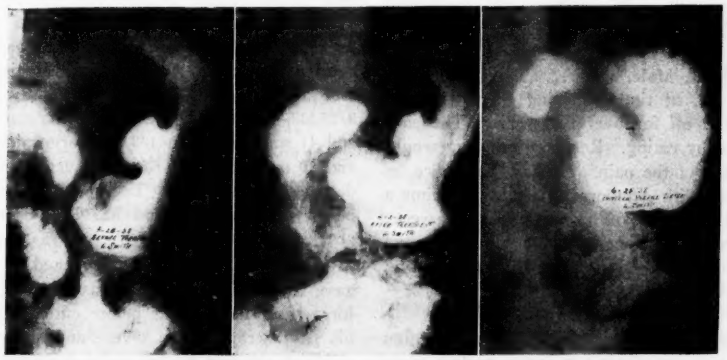
Case No. 3. J. K., Male, aged 66. The patient gave a history of vague epigastric distress for several years. Food and alkali would relieve the distress at times. Hematemesis occurred on one occasion. Loss of 30 lbs. of weight in the past year. Maximum free acidity was 42. The roentgenologic data were 8/27/38—large gastric ulcer on lesser curvature 16 mm. deep and 18 mm. wide; on 9/10/38—gastric ulcer 10 mm. deep and



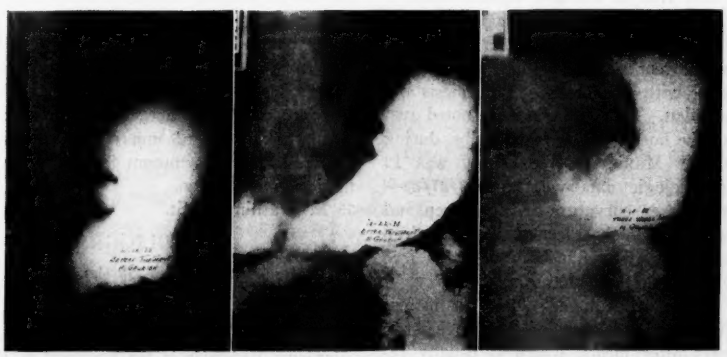
CASE No. 10

12 mm. wide. The patient has been symptom free on medical management since he left the hospital.

Case No. 4. J. A., Male, aged 49. This patient had sharp epigastric, postprandial pain after meals for one year, at times accompanied by vomiting. "Dark" stools have been noted about one month ago. Lost 16 lbs. in the past year. Only physical finding was rigidity in the upper abdomen. Maximum free acidity was 35 units. The roengenologic data were: 10/24/38—large gastric ulcer on lesser curvature 28 mm. deep and 50 mm. wide; on 11/5/38—large niche 22 mm. deep and



CASE No. 11



CASE No. 12

35 mm. wide and on 12/3/38 the ulcer was 9 mm. deep and 10 mm. wide. The patient has been gaining weight and felt fine three months after the last x-ray picture was taken.

Case No. 5. F. H., Male, aged 51. This patient gave a two-year-old history of occasional pain in the right upper quadrant, usually associated with constipation, and not related to food. He has been a heavy drinker until shortly before the onset of above symptoms. The physical examination revealed only an anemic, slightly emaciated individual. Maximum free acidity was 20 units. The x-ray reports were: on 7/27/38—outpouching along the lesser curvature 13 mm. deep and 25 mm. wide; on 8/27/38 small niche 3 mm. deep and 8 mm. wide with hourglass constriction. The patient has been under observation in the gastrointestinal clinic since his discharge from the hospital. He gained weight and felt well when last seen (five months later).

Case No. 6. W. W., Male, aged 52. The patient has had constipation for the past ten years. In the past year nausea became an associated symptom and in recent months an almost constant epigastric pain became the most noticeable trouble. Vomiting would relieve the pain. Alkali was not tried. Lost 15 lbs. in the past few months. The maximum free acidity (after histamine) was 46 units. The x-ray reports were: on 7/25/38—penetrating ulcer 11 mm. deep and 21 mm. wide; on 8/13/38—no niche visible. Seven months after leaving the hospital the patient is symptom free and feeling fine.

Case No. 7. J. P., Male, aged 47. This patient has had a gnawing and, at times, burning epigastric pain after meals on and off for over two years. The pain would be relieved by eating. Recently vomiting would occur at the height of the pain. He has been twice on a Sippy regimen with temporary relief. Maximum free acidity was 30 units. The x-ray reports were: on 4/23/38—deep penetrating ulcer 30 mm. deep and 18 mm. wide; on 5/14/38—deep niche 16 mm. deep and 15 mm. wide with incisure opposite it; on 6/22/38—penetrating ulcer 8 mm. deep and 10 mm. wide.

Gastroscopic examination revealed a large benign ulcer. Almost two years after a large gastric ulcer was first obesrved, this patient has been going along well. Was symptom free in the past eight months.

Case No. 8. L. F., Male, aged 31. The patient gave a history of intermittent epigastric pain for ten years. These would usually occur after drinking episodes, and would be associated with vomiting. Hematemesis occurred on one occasion. Tarry stools were noted just before entrance to the hospital. He lost ten lbs. during the past eight days. Maximum free acidity was 12 units. The roentgenologic data were: on 9/27/38—large niche on the lesser curvature 16 mm. deep and 22 mm. wide; on 10/8/38—the ulcer was 8 mm. deep and 5 mm. wide. The patient has been symptom free since he left the hospital, four moths ago.

Case No. 9. K. K., Male, aged 50. This patient gave a short (two weeks) history of sharp epigastric pain, 10-15 minutes after meals, which is usually relieved by vomiting, but only slightly by alkali. Vomitus is occasionally bloody and mixed with food particles. Tarry stools were noted once. Maximum free acidity was 90 units. The x-ray data were: on 7/26/38—large outpouching on lesser curvature 18 mm. deep and 35 mm. wide; on 8/13/38—penetrating ulcer 9 mm. deep and 18 mm. wide, and on 12/10/38—small niche 2 mm. deep and 4 mm. wide. This patient has been going along well since he left the hospital six months ago.

Case No. 10. J. K., Male, aged 55. Six months ago the patient first began to have symptoms of epigastric pain, after meals, relieved by food, alkali and vomiting. Shortly thereafter he had a gastric hemorrhage and was taken to the hospital, where he received a blood transfusion and was then put on a Sippy regimen. Was symptom free for six months i. e., until one week ago, when pain and vomiting recurred. Lost 15 lbs. in one week. Maximum acidity was 80 units. The x-ray reports were: on 9/19/38—large niche on lesser curvature 18 mm. deep and 27 mm. wide, also a duodenal ulcer on 10/8/38 gastric ulcer 5 mm. deep, 8 mm. wide. Duodenal deformity still present. Patient has been symptom free in the past four months and has gained weight.

Case No. 11. L. S., Male, aged 60. This patient had "gastritis" 12 years ago and since then had "gas" after dietary indiscretions. About six months ago, however, he became aware of an upper abdominal soreness which would occasionally radiate to the back. This soreness would be eased by food and alkali, but little by vomiting. Constipation was an associated discomfort. Lost 25 lbs. during this time. Maximum free acidity was 36 units. The x-ray data were: on 3/25/38—large niche on lesser curvature 30 mm. deep and 41 mm. wide; on 4/2/38—large niche 20 mm. deep and 30 mm. wide; on 6/25/38—very small ulcer 2 mm. deep and 3 mm. wide. The patient gained 34 lbs. since he left the hospital and has been symptom free for nearly one year now.

Case No. 12. N. G., Male, aged 53. This patient gave a vague history of occasional abdominal distress for years. Four weeks before entrance to the hospital, his pain became more severe and almost constant and was not relieved by his usual remedies. He came to the hospital because of this severe pain and the vomiting which started recently. There were no important physical findings except that patient seemed to be doubled up with pain. Maximum free acidity was 26. The x-ray data were: on 10/12/38—large gastric niche 20 mm. deep and 22 mm. wide; on 10/22/38—gastric ulcer 10 mm. deep and 15 mm. wide; on 11/14/38—small gastric lesion 3 mm. deep and 10 mm. wide. The patient has been symptom free since leaving the hospital four months ago.

55 E. Washington St.

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TREATMENT OF PORTWINE BIRTHMARKS (NEVUS FLAMMEUS) BY GRENZ RAYS

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CHICAGO

HISTORY OF GRENZ RAYS

The term "grenz rays," applied to electromagnetic oscillations produced by a special form of apparatus, was chosen by Bucky[1,2] because he considered the oscillations to lie between the ultraviolet and the x-rays. While the grenz rays are heterogeneous, the majority of them are of the order of two Angström units. The minimum wavelength of two Angström units is very close to x-ray waves that are used therapeutically but are quite far from ultraviolet rays. The term "grenz," then, or borderline rays, is one that is generally used at the present time; at times they are called the supersoft or infra-roentgen or x-rays of long wavelength because they are roentgen rays of extremely long wave-length and large absorption coefficiency.

The original work with the so-alled grenz rays was done by Shultz,[3] who reported his findings in 1911. Many other reports are now available, but the man who has done a great deal of clinical and experimental work in this connection is Bucky. Bucky's findings and opinions from his textbook[4] and various writings will be freely quoted. Eller[5] had recorded his findings in dermatologic fields. While there is still controversy as to the efficacy of the grenz rays in dermatology, and, as Bucky says, a great deal of research work is still needed there is no question of their value in my experience in certain dermatologic diseases both because of their curative ability and their relative freedom from serious post-treatment sequelae in contrast to those following excessive conventional hard or short wavelength rays.

PHYSICS

There are some differences of opinion regarding the status of rays produced by voltages from 5 to 10 kv. Bucky rather sets them aside as a separate radiation with a place in the spectrum between the ultraviolet and the roentgen rays, being considered of a wavelength of about 1.5 to 2 Angström units. He feels that almost all their energy is absorbed by the tissues, e.g., skin of about 2 mm. thickness. Most investigators give the roentgen ray spectrum as ranging between 0.05 and 500 Angström units or more. This would naturally place the grenz rays well within the range of roentgen rays and would coincide with Failla's[6] and with Pusey's[7] statements, that they should have all the physical properties of conventional roentgen rays. Eller has investigated the penetration power of rays produced by 8 kv. with a Mueller tube and obtained photographs of metallic objects through a filter of 1 mm. of aluminum. The other factors were 8 milliamperes, distance 6 cm. and time four minutes. This is rather conclusive evidence that part of the beam of the rays produced with a power of 8 kv. can easily penetrate the cutis. Both Frank and Bucky have shown that half of the grenz radiation, as 10 kv., is absorbed in 0.47 mm. of water, in 0.52 mm. of muscle or cutis vera, in 0.56 mm. of epidermis, or in 0.77 mm. of subcutaneous tissue.

BIOLOGY

Many interesting biologic phases of the grenz rays have been recorded. Bucky feels that the wavelengths of about 2 Angström units are chiefly absorbed by the epidermis and have very little direct action upon the subcutis. He feels that it is quite impossible for sequelae to develop even with marked erythema doses of 10 kv. or less. Several instances have been recorded of telangiectasia following larger doses (Bucky), but this disfigurement becomes involuted in time. It is generally agreed that the serious disfiguring sequelae, so often seen in patients who have been treated by x-ray, do not occur. These untoward results include telangiectasia, atrophy of the skin, keratoses, late ulcerations, precancerous and malignant growths, besides hyalinization of the skin with intractable pruritis and other skin changes. I have recently seen even a

*Read before the Norwegian American Hospital Staff Conference, December 8, 1938.

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fibrosarcoma of the skin of the nose following x-ray dermatitis in a young woman who had received twenty-two x-ray treatments to her face.

This apparent freedom from serious untoward results has prompted me to investigate clinically the possibilities of grenz ray therapy in a number of skin conditions. Only a few syndromes were chosen in an effort to determine definitely the efficacy of this form of treatment. In my own experience patients are resisting more and more the use of x-ray because of the well-known x-ray burns, which danger is practically nil in skilled hands. Three hundred and eighty-nine patients have been treated by the grenz rays with an average of 6½ treatments. The standard Westinghouse machine has been employed with 8 kv. and 8 milliamperes as a constant setting, except in birthmarks. The other factors, such as distance and time, were changed to suit the condition and the area to be treated. The possibility that grenz rays might supplant the hard or roentgen ray was another reason for using them and also, because by some previous observations (White and Dorne[8,9]), it was found that some dermatologic entities actually yielded more rapidly to the grenz ray than to the ordinary x-ray treatment. Furthermore, it was decided to use the grenz rays in fractional doses, with roughly one-fourth of a skin erythema dose (80 r. for the usual dermatosis), to see if fractional therapy would be of value and to prevent erythma doses with their resultant pigmentation and possibly telangiectasia. Many investigators have used erythema doses with ordinary dermatoses. Much stronger doses were applied in the treatment of keloids and epitheliomas. It was particularly advantageous to prevent resultant hyperpigmentation, for it is well known to last for several months. At this conference, only the results of treatment of portwine birthmarks will be reported.

DESCRIPTION OF NEVUS FLAMMEUS

There are various types of the vascular birthmark, or nevus vascularis, the most common types being the flat, hypertrophic and cavernous. The flat nevus, or so-called nevus flammeus or portwine birthmark, is a superficial plexus of dilated capillaries. The hypertrophic and cavernous types of nevus have responded very well to radium therapy; however, results of similar treatment in nevus flammeus have been practically nil. Consequently, various modalities have been sought and followed to see if something could not be done for this cosmetic defect.

The nevus flammeus, then, is a superficial, flat nevus occurring as an area of redness and produced by a network of dilated capillaries. On close examination this can be made out with the naked eye. The color is usually bright red of different intensity in different cases according to the vascularity present. Occasionally it is dark red or even bluish-red. The border, in this as in other forms of nevus, is sharp, but there may be small needle-like rays along the border of the chief lesion or radiating irregularly from it. The shape of the lesion is quite irregular and there is practically no limit to its size. The most frequent locations are the face and head, but they may occur anywhere. The commonest site is said to be the back of the head just below the occipital prominence. Cases which come under observation of the dermatologists are most frequently on the face.

PREVIOUS METHODS OF TREATMENT

Former treatment of these lesions consisted of radium, x-ray and the Kromayer watercooled lamp. However, with radium and x-ray the dosage must be so strong that a serious radio-dermatitis invariably results. Consequently there is a tendency towards carcinoma. These x-ray atrophies are so serious that x-ray and radium cannot be used in the treatment of these birthmarks. An occasional case has been reported as improved by the Kromayer lamp, but in the main this treatment has been very unsuccessful in the hands of most dermatologists. Destructive methods, such as the carbon dioxide snow method, have been used by some dermatologists but have produced irregular postage stamp scars, so the condition is just as unsightly as it was before treatment.

Because of the nature of grenz rays, they should be of help in cases of this type. However, in a report made in 1936 of the use of grenz rays in nevus flammeus, I stated that two cases had been treated and showed no response. Now, with increased experience and using larger dosage, it has been found that the grenz rays are efficacious in improving the cosmetic result with marked bleaching of the birthmark.

THERAPEUTIC RESULTS

In the average case Kalz of Prague applied grenz rays in a single dose of from 800 to 1,100 r.

with a total dosage of 10,000 to 12,000 r. The factors he used are 12.5 kv., 15 ma., with .0026 aluminum filter and a distance of 7 cm. The surrounding areas, of course, are protected by barium zinc paste. When the lesion is located near the eye or in the anterior portion of the neck, diminished dosage is used, not surpassing 700 to 800 r. per unit, with a total of 7,000 to 8,000 r., since these areas may develop telangiectasia if the treatments are too large. Large nevi are best treated by subdividing into smaller fields, diminishing the dosage to each field 20 per cent., while smaller nevi may be treated with 20 per cent. above the average amount. In children he uses a single dose of 800 r. per treatment, with a total of 8,000 r., never more than 8,000 r. For deep-seated lesions an additional filter of .001 mm. is recommended.

The degree of reaction following the first irradiation, the location or site of the nevus, its clinical aspect and the age of the patient are all factors in the evaluation of proper dosage. Kalz found that in 31 patients in whom the treatment could be finished properly, there were several who showed telangiectasia who received the higher doses with no tendency toward progression of the nevus flammeus. One patient showed alopecia of the eyebrows. Occasionally a staphylococcic infection, such as impetigo, occurred which was believed to be caused by vascular paresis.

The prognosis for improvement is best in small children and is better in light colored than in deep red lesions. While pigmentation may disappear spontaneously, the development of small dark brown patches is a serious symptom, necessitating the discontinuance of grenz ray therapy.

In the 1937 Yearbook of Dermatology, Wise and Sulzberger state: "Since neither x-ray nor ordinary radium therapy or surgery is permissible or satisfactory in most cases, a method like the grenz ray, and other related safe modalities, deserves further careful study at the hands of the American dermatologist."

Repeated treatments with the grenz, or soft xray, will definitely produce a marked bleaching in nevus flammeus, or so-called portwine birthmarks. Up to this time there has been no form of treatment that could be used without danger in capillary birthmarks of this type. My own experience has been limited to eight cases, all in adults, in whom the birthmark has been present for many years. With therapy extending over three to nine months' time, treatments being given every two weeks, lesions have shown marked bleaching and in the main results have been very satisfactory.

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TRUE KNOTTING OF THE UMBILICAL CORD

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The possibility of knotting of the cord during pregnancy has long been recognized. Although twisting, looping and coiling of the cord are relatively commonly observed, a true knot of the umbilical cord remains a sufficiently bizarre phenomenon to justify further discussion of the subject and presentation of further cases observed in private practice.

It is generally agreed by most authors that true knots in the cord occur in about 0.5% of all cases. Von Winckel[1] estimates the incidence to be from 0.4% to 0.5% of all births. Chantreuil[2] found six cases of knots in the umbilical cord (one of which was double) in 1,000 deliveries, whereas Von Hecker[3] reported true knots in 115 cases out of 31,590 births or one in every 274 cases, with no injury to any of the children. Mundé[4] saw two cases in 1,000 deliveries, Red-

TABLE: CASES OF KNOTS IN THE CORD COLLECTED FROM ENGLISH LITERATURE

Author	Source	Age	Parity	Length of cord	Description of knot	Fetal Result	Author's opinion of effect of knot
Barton (8)	Va. M. Monthly 22:859, 1895	..	..	.....	.....	Died	Knot tight enough to stop circulation
Benedict (9)	Med. & Surg. Rep. 63:435, 1890	28	M	.....	Single knots (2)	.....	
Benedict (9)	Med. & Surg. Rep. 63:435, 1890	33	M	26 in.	Single knots (2)	Rec.	No demonstrable interference with circulation
Benedict (9)	Med. & Surg. Rep. 63:435, 1890	37	M	short	2 knots	.....	
Browne (10)	32:17, 1925 J. Obst. & Gynec. Brit. Emp.	31	M	60 cm.	Knot in middle tightly drawn	Died	Knot in cord
Browne (10)	32:17, 1925 J. Obst. & Gynec. Brit. Emp.	18	M	.....	.....	1 twin died	Twin that died was monster
Clarke (11)	Brit. M. J. 1:80, 1883	..	M	20 in.	Knot 6 in. from umbilicus	.....	Knot not tight enough to impede circulation
Cleveland (12)	Obst. Trans. Lond. 13, 1872	..	M	17 in.	Knot 3 in. from navel	Died	
Cowern (13)	St. Paul M. J. 17:459, 1915	..	..	.....	.....	Died	Knot so tight that nutrition of fetus cut off
Cowern (13)	St. Paul M. J. 17:459, 1915	..	..	.....	Single knot	.....	
Cowern (13)	St. Paul M. J. 17:459, 1915	..	..	.....	2 knots	.....	
Cowern (13)	St. Paul M. J. 17:459, 1915	..	..	.....	2 knots 4 in. apart	.....	
Crawford (14)	Surg. Gynec. & Obst. 34:546, 1922	44	M	.....	4 true knots, 6 false knots	SB	Unusual activity of fetus caused death
Cuthbert (15)	Obst. J. 1874-75 2	30	M	17 in.	Simple knot	Died	
Davy (16)	Obst. Gazette 1:344, 1878	..	..	usual length	Knot in center	Died	Death caused by knot in cord
Fleming (17)	19:297, 1924 Tex. St. M. J.	..	..	48 in.	1 knot 1 ft. from placenta 1 knot 1 ft. from umbilicus	.....	
Floyd et al. (18)	Tri-State M. J. 6:1308, 1934	26	M	.....	Knot near middle and placental thirds	Rec.	
Frank (19)	Am. J. Obst. 55:790, 1907	31	M	90 cm.	1 knot 30 cm. from placenta	Died	
Frewer (20)	Brit. M. J. 1:159, 1936	..	P	.....	2 knots	1 twin died	
Grieve (21)	Lond. & Edinburg Monthly J. 1842, p. 23	..	..	.....	Knot in middle	Died	Knot tight enough to impede circulation
Griswold (22)	Physician & Surgeon 34:420, 1912	25	P.	.....	Bow knot about left arm	Rec.	Knot not tight enough to obstruct blood supply
Guinness (23)	Brit. M. J. 1:875, 1922	24	M	long	Single knot	SB	
Hannay (24)	Lond. Med. Gaz. 27:122, 1840	28	M	.....	Single knot near middle of cord	SB	
Lyon (25)	Glasgow Med. Soc. Dec. 1838	..	..	.....	Loose knot on cord	Rec.	
Pagon (26)	Glasgow Med. Soc.	..	..	.....	Loose knot on cord	Rec.	

Pagon (26)	Glasgow Med. Soc. Dec. 1838	..	..	.....	Loose knot on cord	Rec.	
Smellie (27)	Theorie & Practice of Midwifery, p. 118	..	..	.....	Tight knot on middle of cord	Died	Died as result of condition of cord
Smellie (27)	Theorie & Practice of Midwifery, p. 118	..	..	.....	Knot in cord	Rec.	
Smellie (27)	Theorie & Practice of Midwifery, p. 118	..	..	.....	Loose knot	Died	Probably died of long labor
Blundell (28)	Castle's Prin. & Practice of Obst. 1st ed. p. 108	..	..	.....	3 knots in cord	.....	
Ashwell (29)	Practical Treatise on Parturition	..	..	.....	5 knots	Rec.	
Petit (30)	Quoted by Burton in Essay on Midwifery, Lond. 1751	..	..	.....	Knot in middle	.....	
Jones (31)	Med. Brief, St. Louis 13:190, 1885	..	M	24 in.	Knot in cord about 8 in. from child	Rec.	
Doane (32)	Leonard's Illustrated Med. J.				3 knots	Rec.	
Christian (33)	Leonard's Illustrated Med. J.	..	..	26 in.	Knot 3 in. from umbilical end	Rec.	
MacCauley (34)	Med. Press & Circ., Lond. 1892, p. 453	30	P	.....	Reef knot in middle	Died	So tight as to obstruct circulation and cause death of fetus
Mack (35)	Natl. Eclect. Med. Assn. 11:286, 1919	..	M	45 cm.	1 knot	Died	Asphyxia neonatorum
McCormick (36)	J. Indiana M. A. 22:245, 1929	31	..	.....	Loose figure 8 knot	Rec.	
Mitchell (37)	Am. J. Obst. & Gynec. 37:342, 1939	29	M	82 cm.	Tight knot 54 cm. from placenta	Dead	
Morris (38)	Med. & Surg. Rep. 40:466, 1889	42	..	.....	Knot near center of cord	Dead	Death from knot in cord
Munde (4)	Am. J. Obst. N. Y. 12:751, 1879	..	P	32 in.	Loose knot	Rec.	
Munde (4)	Am. J. Obst. N. Y. 12:751, 1879				Knot in cord	.....	
McNally (39)	Am. J. Obst. & Gynec. 36:156, 1938	29	M	62 cm.	Knot 45 cm. from placenta	Died	Circulation completely obliterated
Oswald (40)	Brit. M. J. 1:100, 1883	..	..	long	Knot about 3 in. from umbilicus	Rec.	Not tight enough to obstruct circulation
Parker (41)	Boston M. & S. J. 97:28, 1877	20	P	40 in.	Knot near placental end	SB	Author thinks child died during labor
Pooley (42)	Am. Med. Bi-weekly 12:169, 1881	35	M	long	Tied about its middle in tight knot	Dead	Author believes knot caused death
Leidy (43)	Med. & Surg. Rep. 18:402, 1868	30	..	.....	Knot near fetal end	Dead	Knot completely obstructed circulation
Redman (5)	Lancet & Clinic 1880 p. 274	..	..	over 4 ft.	.....	.....	
Redman (5)	Lancet & Clinic 1880 p. 274	..	..	over 4 ft.	.....	.....	
Redman (5)	Lancet & Clinic 1880 p. 274	..	..	over 4 ft.	.....	.....	
Redman (5)	Lancet & Clinic 1880 p. 274	..	..	.....	.....	.....	
Nolan (44)	N. Y. Path. Soc. Apr. 14, 1869	..	..	24 in.	.....	Rec.	

Author	Source	Age	Parity	Length of cord	Description of knot	Fetal Result	Author's opinion of effect of knot
Beale (6)	N. Y. Path. Soc. Apr. 14, 1869	..	..	.....	.....	.....	
Beale (6)	N. Y. Path. Soc. Apr. 14, 1869	..	..	.....	.....	.....	
Beale (6)	N. Y. Path. Soc. Apr. 14, 1869	..	..	.....	.....	.....	
Beale (6)	N. Y. Path. Soc. Apr. 14, 1869	..	..	.....	.....	.....	
Quigley (45)	Am. J. Obst. & Gynec. 29:335, 1935	34	P	.....	Cord of first child tied in mass of knots of 2nd child	1 twin died	
Sankey (46)	Lond. Obst. Trans. 3, 413	43	M	.....	Simple knot in middle	Died	Author does not believe knot caused death
Simpson (47)	Obst. J. Gr. Brit. 6:577, 1878	..	M	35 in.	Knot 9 in. from umbilicus	Rec.	
Stern (48)	Med. & Surg. Rep. Phila. 39:108, 1878	15	..	.....	Knot 8 in. from umbilicus	Died	Believes death from knot in cord
Walker (49)	Med. Herald, Louisville 5:529, 1883	..	..	40 in.	Knot in cord	Rec.	Did not impede circulation
Waters (50)	Am. J. M. Sci. 36:358, 1845	..	M	.....	Knot 1 ft. from umbilicus	Rec.	Did not impede circulation
Waters (50)	Am. J. M. Sci. 36:358, 1845	..	M	long	1 knot	Rec.	Did not impede circulation
Waters (50)	Am. J. M. Sci. 36:358, 1845	..	M	33 in.	1 knot 2½ in. from navel	Rec.	Did not impede circulation
Wells (51)	Boston M. & S. J. 96:571, 1877	..	M	58 in.	Knot 1 ft. from placenta	SB	Knot tied so tight it could not be untied
Weston (52)	Am. J. Obst. 28:144, 1893	..	..	long	.....	Rec.	
Zollickoffer (53)	Am. J. M. Sc. 28:109, 1841	..	..	.....	.....	Rec.	
Zollickoffer (53)	Am. J. M. Sc. 28:109, 1841	..	..	.....	.....	Rec.	
Zollickoffer (53)	Am. J. M. Sc. 28:109, 1841	..	..	.....	.....	.....	
Partridge (7)	Am. J. Obst. 13:114	..	..	.....	2 knots	.....	
Partridge (7)	Am. J. Obst. 13:114	..	..	33 in.	1 knot	.....	
Partridge (7)	Am. J. Obst. 13:114	..	..	33 in.	Figure of 8 knot	.....	
Partridge (7)	Am. J. Obst. 13:114	..	..	.....	.....	.....	
Mastin (54)	Am. J. Obst. N. O. M. & S. J. 19:460, 1866	..	..	.....	Knot in funis	Died	Died from knot in cord
Bradley (55)	Proc. Northumb. & Durham M. Soc. 1889	..	..	.....	Knot in cord	.....	
Holliday (56)	Cleveland J. M. 5:496, 1900	..	..	.....	Knot in cord	.....	

man[5] four in 10,000 births, Beale[6] four in 1,220 and Partridge[7] four in 500 cases. The sum of all these cases totals one in every 335 cases, or an incidence of 0.3%. A comprehensive search of the American literature reveals 75 cases which have been recorded (see table). We have been able to find 37 articles on knots in the cord in the foreign literature,[57-94] most of which have occurred in France and Germany (20 and 11, respectively). Whereas there is little doubt that there have been cases which have not been reported, we can make an approximation of the occurrence of this anomaly from cases reported, which is adequate enough for all practical purposes. The figures quoted above are obviously indicative of the rarity of true knots of the umbilical cord.

Atwood[95] noted that knotting of the cord is not characteristically observed in animals. Sellheim[96] believes that this condition occurs in human beings because of "their upright position, there ability to swing about rapidly on a vertical axis, the heavy head of the human fetus as compared with the body and to the fact that it must remain longer in bent position before reaching the pelvic outlet."

The mechanism of formation of a knot in the umbilical cord is still subject to conjecture. Most men believe that knotting occurs either between the ninth and twelfth weeks of intra-uterine life, during which time the fetus is sufficiently small to swim around freely in the amniotic fluid and the cord is sufficiently long to facilitate twisting and knotting, or during the progress of labor, a process which lends itself quite readily to complications. Others believe that outside stimuli are a contributing factor. No explanation has as yet been offered which is entirely satisfactory.

Atwood[95] believes that the process of formation of a true knot in the cord includes "contraction of the uterus, passivity, subsequent sudden activity on the part of both the mother and fetus and the laws of gravitation." He observed that knots situated close to the navel indicate early formation, whereas knots formed later were located near the placental end. Sellheim[96] noticed that knots formed during pregnancy were firmer than those formed during parturition.

The length of the cord seems to be a contributing factor in the formation of knots. The normal length of the umbilical cord has been estimated to be about 50 cm. (DeLee[97]) or from 20 to 22 inches (Baudelocque[60]). The average length of the cord in our series was approximately 82 cm. (33 inches). The shortest cord recorded in our series was 43 cm. (17 inches) and the longest 145 cm. (58 inches). However, Collyns[98] in 1842 recorded a case of two knots in the cord, which was only six inches long and Woets[80] records a case in the French literature of a 14-inch cord.

We are unable to say whether parity played any part in this group of 75 cases because of the failure to record this information in 44 instances. In the 31 cases in which the parity was mentioned 24 were multiparae. We hesitate to generalize from such a small number, but from this number, knots have occurred more than three times as often in multiparae as in primiparae. As regards sex of the baby we can only mention the number of cases in which the sex was specified, which is too small to be beneficial. There were seven female babies with knots in the cord and four males.

Cords with knots offer a characteristic appearance. They are usually quite long and often edematous and engorged, particularly near the knot. The cord is almost always dark in color, frequently greenish black to black. The knot, which may be a simple knot (15, 47, etc.), bow-knot (22), or figure of eight (36), may be situated at any point, either near the placental end (42) or the fetal end (44) and sometimes in the center (16). If the knot is tight, a distinct and permanent grooving may be observed at the point of its formation. Where the knot is compressed there is hardly any jelly of Wharton, so that here the cord is flat in appearance. Some knots are quite loosely formed, whereas others are so tight that they cannot be untied (52).

The effect of knotting of the cord on the fetus is still questionable. Atwood[95] estimates the fatal effect of this abnormality on the fetus to be 50% of occurrences. It would appear to depend somewhat on the tightness with which the cord is drawn (the looser the knot, the more favorable the prognosis) and the time of formation (knots formed earlier are usually more fatal). In this series of 75 cases the result was recorded in 49 cases—28 died and 21 survived. The authors did not attribute death of the infant to knot of the cord in four of the 28 cases,

so that in this small number knots were responsible for the fatal result in about 53% of the cases.

Various opinions have been expressed concerning the question of interference of fetal circulation by a knot in the cord, there being an almost equal number of advocates of either opinion. Baudelocque[60] believed that the cord could not be drawn tight enough to cause death of the fetus. He reported a case of a healthy child, whose umbilical cord was knotted three times, one knot interlaced in the other, and drawn as tightly as it could possibly be done. Gardien[99] was of the same opinion as Baudelocque when he wrote, "they can never tighten themselves during the pregnancy sufficiently to cause the death of the fetus or interfere with its circulation." Among others who have expressed similar opinions are Jacquemier[100] and Tannier.[101] Tannier[101] offered experimental evidence to verify his statements.

Among those expressing the opposite opinions are Chantreuil,[2] Levret,[102] Naegle and Grenser,[103] Smellie[27] and Browne.[10] Browne[10] bases his opinion on the following experiment which he performed to prove his conviction: "An umbilical cord was taken immediately following delivery and separated from the placenta. A glass canula was fitted into the vein while to the other end of the canula was fixed a long rubber tube connected with a mercury manometer. Through the open end of the tube water was injected by means of a large Record syringe. During the experiment the surface of the cord was kept well lubricated with vaseline so that its slippery surface might resemble uterine life." When there was no knot in the cord, the fluid passed at a pressure of 10 mm. of mercury. When one knot was on the cord, no weight attached and the knot not tightened in any way, pressure was 20 mm. With two true knots pressure was 60 mm. A single true knot in the cord and a weight of 20 gm. was tied at the distal end. Fluid passed at a pressure of 40 mm. With a 50 gm. weight a pressure of 70 mm. was required and so proportionately up to 160 gm. requiring 165-170 mm. pressure. Browne concluded from these experiments that even a slack knot was sufficient to interfere with circulation.

CASE REPORTS*

Case 1. Mrs. A. R., white, para 1, 26 years of age. The past history was uneventful except for a pelvic laparotomy two years previously at which time a left oophorectomy and appendectomy were performed. Menstruation began at the age of 14 with a slightly irregular cycle but no pain. The prenatal course was uneventful until two days before her admission to the hospital at which time she was seen in the office and said that she had not felt the baby move since the day previously. Fetal heart tones were not heard at this time. The mechanism of labor was normal, first stage five and five-sixths hours, second stage 40 minutes and the third stage 16 minutes. A stillborn female infant was delivered spontaneously. The infant was well developed and of normal size and weight but was macerated and appeared to have been dead for at least four days. There were two complete half-hitch knots one foot apart near the center of the cord which measured 120 cm. after the knots were untied. In addition to the knots in the cord there were two loops of cord around the baby's neck. It is our opinion that these knots were formed by the loops slipping back over the baby's body and that one of the knots was tied sufficiently to cause asphyxiation of the baby. It is of interest to note that this patient was delivered of a full term living baby on October 2, 1938, at which time the cord was found to be 86 cm. long and there were three loops around the baby's neck.

Case 2. One of us (A.T.L.) has seen one other case. This was a primipara who was delivered spontaneously of a full term male fetus which was stillborn and there was a true knot tied tightly in the cord which was of normal length.

Since this article was acceptable for publication, the authors have had one additional case on their service. The mother was a 30 year old para VI. The female infant was 50 cm. long weighing 7 lb. 2 oz. The cord was 65 cm. long and there were two true knots, one of which was very tight and the vessels proximal to this knot were collapsed. The baby's heart had failed a short time before delivery and it is our opinion that the constriction of this knot was responsible for the fetal death.

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SUB-CLINICAL PELLAGRA IN THE CHICAGO AREA; ITS INCIDENCE AMONG CASES ADMITTED TO A PRIVATE SANITARIUM

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Pellagra is commonly thought to be a disease largely limited to southern United States and to the economically dependent or partially dependent group of the population. While this is doubtless true of full-blown "text-book" cases of pellagra, it is my contention that there are many cases of sub-clinical type which occur in other states, and in other population groups.

During 1938 it was possible to make a diagnosis of pellagra in 13 of 205 cases (6.3%) admitted to Mercyville Sanitarium, a private institution for nervous and mental diseases populated by patients from the Chicago metropolitan area. In none of these cases was the pellagra of a frank, classical type, but their prompt response to nicotinic acid, the specific for pellagra,[1] established the diagnosis.

Before the advent of nicotinic acid therapy, the writer had noted many cases of glossitis and stomatitis, which were not explainable on a basis of uremia, anemia, or infection. Several cases were treated with brewer's yeast and liver extract but the results were slow and doubtful. When adequate doses of nicotinic acid were administered to cases of a similar type their buccal and oral mucous membranes became normal in appearance in a day or two, thus clinching the diagnosis of pellagra.

In all but two cases of the 13, pellagra was only a secondary diagnosis, and the patients were suffering from mental diseases unrelated to pellagra. In these cases, although the physical symptoms of pellagra promptly responded to nicotinic acid, there was no marked change in the mental condition. The other two cases appeared to have pellagra psychosis as their chief trouble, as they promptly recovered when the nicotinic acid was administered.

In table 1 are shown the incidence of the common manifestations of pellagra in the 13 cases studied. There was diarrhea in four, vaginitis in three, abdominal pain in four, fever in three, stomatitis and glossitis in all thirteen, and dermatitis in only one. These were physical symptoms and they all promptly responded to nicotinic acid. Insomnia, depression, irritability, apprehensiveness and weakness were less specifically symptoms of pellagra and, while they im-

Case Number	Admission Date	Sex	Age	Principal Diagnosis	Duration	Diarrhea	Dermatitis	Stomatitis	Glossitis	Abdominal Pain	Insomnia	Depression	Apprehension Incr.	Irritability	Weakness	Vaginitis	Fever
1.	3-11-38	M.	28	Schizophrenia	10 years	0	0	+	+	0	0	+	+	+	+	..	0
2.	5-5-38	M.	84	Senile Psychosis	2 years	+	0	+	+	0	+	+	+	+	+	..	+
3.	5-22-38	F.	73	Senile Psychosis	3 months	0	0	+	+	0	+	+	+	+	+	0	0
4.	5-24-38	M.	77	Senile Psychosis	4 years	0	0	+	+	0	0	0	0	+	+	..	0
5.	5-25-38	F.	68	Manic — Depressive Psychosis Depressed Type	2 months	+	0	+	+	+	+	+	+	0	+	0	0
6.	6-6-38	F.	77	Senile Psychosis	2 years	0	+	+	+	0	0	+	0	+	+	0	0
7.	6-25-38	F.	68	Senile Psychosis	1 year	+	0	+	+	0	+	+	+	+	+	0	0
8.	8-2-38	F.	49	Schizophrenia—Catatonic Type	6 months	0	+	+	+	0	+	+	+	+	+	+	+
9.	8-12-38	F.	38	Pellagra	10 days	0	0	+	+	+	+	+	+	+	+	0	0
10.	10-24-38	F.	40	Rheumatic Heart Disease—Decompensated	Several years..	0	0	+	+	0	+	+	+	0	+	0	0
11.	10-27-38	F.	48	Psychoneurosis—Neurasthenia	2 years	0	0	+	+	+	+	+	+	+	+	+	0
12.	12-11-38	F.	43	Toxic Psychosis?	1 week	0	0	+	+	0	0	+	+	0	0	+	0
13.	12-11-38	F.	68	Pellagra	5 months	+	0	+	+	+	+	+	+	+	+	0	+

proved in the two cases of uncomplicated pellagra, their course in other cases tended to follow the course of the principal disease.

The following case summaries are given for illustration:

Case 3. This patient was a woman, aged 73, suffering from a depressed and agitated type of senile psychosis which had begun three months previous to admission. The general physical examination was essentionally negative except for undernutrition, general arteriosclerosis and glossitis and stomatitis. The patient was given 120 mgs. of nicotinic acid daily, and in three days the lesions of the mucous membranes had entirely healed. The depression and agitation remained the same.

Case 4. This patient was a man 77 years of age, entirely deaf, and almost completely demented. His general physical examination revealed nothing noteworthy except general arteriosclerosis. There was a diffuse redness of the tongue with no atrophy of the papillae. The entire inside of the mouth presented a bright red, angry appearance. The patient was given nicotinic acid, 40 mgs. after each meal, and the mucous membrane lost its angry red appearance in four days, and appeared normal. There was no appreciable change in the general physical or mental condition of the patient.

Case 11. This patient was a woman, aged 48, suffering from a psychoneurosis. For several years she had suffered from fatigue, lack of appetite and insomnia. The patient had been unemployed of late, and although she had adequate income from property, she had become depressed and uninterested, and had eaten inadequately.

At the time of her admission, the patient had the complaints mentioned, and in addition she was rather hostile and suspicious, fearing she would be "doped" and her mail held. Physical examination revealed emaciation, glossitis, stomatitis and firey redness of the vaginal mucous membranes.

The patient was given 100 mgs. of nicotinic acid after each meal, and the mucous membranes were normal in appearance within forty-eight hours. The suspiciousness and hostility improved, and the patient slept better. There was a gradual improvement in the other symptoms as a response to psychotherapy.

Case. 9. In this case (reported in more detail elsewhere)[2] the patient had had a psychoneurosis with anorexia nervosa for several years. She had allowed herself to become emaciated and her mucous membranes presented the pellagranous appearance. The patient on admission was completely disoriented, hyperemotional and violent. She was given 500 mgs. nicotinic acid daily and the mucous membranes healed in twenty-four hours and her acute mental upset cleared up entirely in three or four days.

COMMENT

In all of the cases the patients were adequately cared for financially, but because of the presence of a psychosis or a psychoneurosis, they had eaten an inadequate diet and as a result had developed pellagra. In no case was there a classical picture of pellagra, but in all cases there were some of the physical signs and symptoms of pellagra and these promptly responded to treatment with nicotinic acid, the specific treatment for pellagra. In most cases the pellagra itself was only a complication of a major psychosis, and hence there was very little improvement in the psychosis itself as a response to nicotinic acid. In two cases, however, the mental symptoms promptly and completely cleared up when nicotinic acid was administered and so the diagnosis of pellagra as the principal disease was made in retrospect.

SUMMARY AND CONCLUSIONS

There proobably are many cases of atypical and subclinical pellagra in the Chicago metropolitan area, as is evidenced by the finding of this disease in 13 of 205 cases admitted to a private sanitarium in this area. In all cases, the pellagra was secondary to, or coincidental with, a psychosis or a psychoneurosis. In all cases the physical symptoms of pellagra promptly responded to treatment with nicotinic acid. There was very little change in the mental symptoms in any except two cases and these cases had pellagra as the principal diagnosis.

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FIBROIDS OF THE UTERUS

An Analysis of 300 Consecutive Patients Operated Upon by the Members of the Gynecologic Staff of a Large Charity Hospital

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Certain etiologic and symptomatologic observations in patients with uterine fibroids have long been taken for granted by those of us who prac-

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Read before the Section on Obstetrics and Gynecology of the Illinois State Medical Society, May 3, 1939, Rockford.

tice and teach gynecology. As yet these have not been clearly presented in the textbooks nor are they generally called to the attention of the practitioner. In order to have substantial verification of our observations, we took it upon ourselves to review the records of 300 consecutive patients operated upon by the members of the gynecologic attending and associate staff at the Cook County Hospital. From this study we are able to draw certain conclusions that may be of assistance in the diagnosis and treatment of uterine fibroids.

Age.—Many of us have felt that fibroids are a condition of middle life or the immediate premenopausal period. Our study shows that while this is somewhat true in white women, it does not hold for the colored race. Of the 300 cases reviewed, 230 patients were colored and 70 were white. In the colored women the average age was 35.2 years, while the white patient's average age was 42.1 years. The three youngest patients operated upon were all colored women, 22 years old. The youngest white woman was 31. The oldest of the colored women was 53 and the oldest white woman was 69. The greatest number of women in any single age group was in the 38-year old colored women, there being 24 in this class. The greatest number of white women was in the 42-year old class where there were nine patients. Going further into this analysis we find that 79.1 per cent. of the colored women were under 40 years of age and 50.3 per cent. were under 35. In the white group, 31.46 per cent. were under 40 while only 12 per cent. were under 35. These figures tell us, then, that fibroids are an affliction of the early or middle forties in white women and the middle thirties in the colored race.

Parity.—It has long been felt that fibroids go hand in hand with sterility. We know that sterility does occur as a result of fibroids because we have cured infertility by judicious myomectomy in selected patients. When we consider such factors as marital state, the frequency of salpingitis with fibroids (the salpingitis producing the sterility), and the great number of criminal abortions in the type of patient seen at the Cook County Hospital, we cannot draw any definite conclusions from the following figures: 63 patients (24.8 per cent.) had never been pregnant; 75 were primiparous; 53 had had two children; 23 had three children; 14 had four; ten had five; seven had six; and nine had an increasing number up to 13. In 46 of the histories no parity was mentioned, so the above figures are based upon only 254 patients.

Size of Tumor.—The size of the tumor produced by the fibroids varied greatly, and the surprising proportions to which some patients allow a tumor to grow before seeking medical aid is interesting. One hundred and six of the records had no mention of the size of the uterus. Of the remaining 194, 17 were smaller than a one-month pregnancy, 20 the size of two months, 69 equalling a three-months' gestation, 62 a four-months' gestation, 60 at the level of the umbilicus, 38 the size of a six-months' pregnancy, 15 at the costal angles and the remaining 19 at the level of the exyphoid cartilage. It can be seen that with the intra-abdominal complications later mentioned, some of these tumors presented very interesting problems at the time of operation.

Symptoms.—It has long been our feeling that the symptoms in fibroids are the direct result of several factors. The location of the tumor with respect to the uterine cavity, the size of the tumor, the relationship of the tumor to adjacent organs, the coexistence of adenomyosis and hyperplasia of the endometrium, and the associated pathological findings all play a part. The occurrence of menorrhagia with fibroids has always been accepted as the outstanding symptomatic feature of this type of tumor. In this series 177 patients had menorrhagia while 123 did not. Of the 177 patients with menorrhagia 157 or 88.7 per cent. had submucous fibroids while 20 (11.3 per cent.) had only subserous and intramural growths. Of the 123 patients without menorrhagia 115 (93.4 per cent.) had no submucous growths while the remaining eight (6.6 per cent.) had some submucous myomata. This makes us feel that menorrhagia in association with fibroids is the result of location of the tumors plus the possible association with adenomyosis and endometrial hyperplasia rather than of the mere presence of fibroids.

Other symptoms complained of on admission to the hospital may be of interest: 53 (17.7 per cent.) of the patients had no complaint other than the knowledge of the presence of an abdominal tumor. Complaints of pain in the abdomen, dysmenorrhea, leukorrhea, bladder pressure with frequency and dysuria and constipation occurred frequently, either alone or in association with

each other or with menorrhagia and knowledge of a tumor.

Associated Pathological Conditions.—It has been said from time to time that fibroids are conducive to or associated with cardiac disease. In this series, 24 patients had histories or physical findings that might suggest heart disease; 13 of these had audible murmurs and 11 had histories of old heart disease. One of these women had an active myocardial degeneration with decompensation on admission to the hospital.

A surprisingly high total is found when we check on the number of patients in this group having pelvic inflammatory disease in association with the fibroids. One hundred and fifty-three of these women, or 50.5 percent. had evidence of chronic pelvic infection as detected in the presence of chronic salpingitis, tubo-ovarian abscesses, hydrosalpingitis or/and pelvic adhesions found at the time of operation.

Other conditions found in the patients with fibroids were bowel adhesions, infection within the fibroids themselves, pregnancy, ovarian cysts, omental adhesions, endometriosis, erosion of the cervix and pelvic floor relaxation.

Operations.—Because of the variety of complications encountered at operation, a number of different types of operation were of necessity resorted to. The operations performed in this group of patients may be tabulated as follows:

Supracervical hysterectomy	48
Appendectomy added in 16	
Supracervical hysterectomy with bilateral salpingo-oophorectomy	145
Appendectomy added in 28	
Complete abdominal hysterectomy with bilateral salpingo oophorectomy	29
Appendectomy added in 2	
Supracervical hysterectomy with unilateral salpingo-oophorectomy	39
Appendectomy added in 12	
Supracervical hysterectomy with bilateral salpingectomy	7
Supracervical hysterectomy with bilateral salpingectomy and unilateral oophorectomy	18
Appendectomy added in 6	
Myomectomy	6
Appendectomy added in 1	
Vaginal hysterectomy	5
Dilatation and curettage	2
Radium insertion	1

Mortality.—In this group of operations there were 11 death (3.78 per cent.). A survey of these deaths with a study of their causes and the types of operations performed may be interesting and instructive.

There were five deaths resulting from peritonitis. Two of these women had supracervical hysterectomy with bilateral salpingo-oophorectomy and appendectomy for fibroids with bilateral chronic salpingitis. Two others had supracervical hysterectomy with bilateral salpingo-oophorectomy, one for fibroids with bilateral salpingitis and the other for fibroids with a pelvic abscess. The fifth patient had a total hysterectomy with appendectomy for an uncomplicated fibroid.

Two patients died of postoperative shock. One of these had a total hysterectomy with bilateral salpingo-oophorectomy and perineorrhaphy for fibroids complicated by salpingitis and a relaxed perineal floor. The other patient had a supracervical hysterectomy with appendectomy for uncomplicated fibroids.

Two patients died as the result of cardiac failure after supracervical hysterectomy for uncomplicated fibroids. One of these women had a long history of chronic myocarditis while the other was acutely decompensated at the time of operation.

One patient died as the result of an intraperitoneal tearing of the bladder with urine extravasation, and one died of paralytic ileus. Both of these patients had had supracervical hysterectomies with bilateral salpingo-oophorectomy for fibroids with bilateral chronic salpingitis and tubo-ovarian abscess formation.

It is interesting to note that there was no death as the result of embolic phenomenia which are supposedly common following hysterectomy for fibroids.

Morbidity.—Sixty patients (20 per cent.) had postoperative morbidity. The cause of the morbidity and the number of cases of each type follows:

Wound infection	35
Pelvic abscess or parametritis	10
Respiratory tract infections, including pneumonia	5
Peritonitis, generalized	2
Fecal fistula formation	2
Thrombophlebitis	2
Cystitis	1
Parotitis	1
Eventration	1

DISCUSSION

A statistical study such as this brings out several features which warrant discussion and may be of value in aiding us in making a diagnosis and choosing an operation which would produce the best result. The factors of age, color and parity are of doubtful value if studied critically. The early age of appearance of fibroids in colored women has been common knowledge. An important point can be culled from an analysis of the age statistics. We have

long taught that bleeding from the vagina in the postmenopausal period is indicative of malignancy in the genital tract in about 65 per cent. of patients. Some of our colleagues have passed off many such cases as fibroids. The small number of such patients found in this series justifies our relegating fibroids to secondary consideration when faced with a postmenopausal bleeding problem.

From a survey of the figures on the size of tumor and the symptoms we learn a great deal. It has always been taught that there are three cardinal symptoms of fibroids, namely menorrhagia, dysmenorrhea and leukorrhea. This we have discovered very definitely, and we postulate that the symptoms of fibroids depend upon the location of the tumors with respect to their proximity to the uterine cavity, their encroachment upon adjacent organs, the existence of associated pathological changes and/or the size of the mass produced by the tumors.

In general it may be stated that regardless of the size of the tumor, menorrhagia, dysmenorrhea and leukorrhea only result when submucous fibroids encroaching upon the uterine cavity are present. The only addition we must make to this statement is in the cases where there exist coincidental adenomyosis uteri and endometrial hyperplasia. Since both of these conditions tend to produce menorrhagia and since in a previous study we showed that these conditions are present in about 60 per cent. of fibroid uteri, we might consider these microscopic entities as normal concomitants of submucous fibroids.

It is possible to have sizable tumors filling the entire abdominal cavity which, because they are subserous and intramural, produce no change in the menstrual function. Bladder symptoms are frequently associated with fibroids, but these only result when tumors are so situated that they press upon the trigone to produce frequency, urgency and dysuria. The diversity of conditions associated with the fibroids and the high incidence of pelvic inflammatory disease in this series can be explained when we consider the class of patient dealt with. Fortunately, the co-existence of these conditions is rather rare in the private practices of the majority of us.

Our final points in the discussion can be based upon the study of the types of operation performed and their relation to mortality. In all there were 65 appendectomies in this series. One patient had a perineorrhaphy in addition to her gynecologic laparotomy. Of the 11 patients who died, five were in the above group. This puts about 45 per cent. of the deaths in the series of 66 patients mentioned above. Stated in another way, about eight per cent. of the patients upon whom multiple surgery was performed died, while the mortality for the entire group was 3.73 per cent. This tends to prove that the adding of an elective appendectomy or perineorrhaphy to an operation for fibroids doubles the chances for mortality.

May we end, then, with a plea that in the routine operation for uterine fibroids, elective appendectomy be not performed unless the appendix is involved in the pathological manifestations. By following such a practice we might hope, in the long run, to show a material reduction in our operative mortality on gynecologic patients.

CONCLUSION

1. Uterine fibroids are an affliction of the fourth decade of life in colored women and the fifth decade in the white race.

2. Parity has no demonstrable relation to fibroids. Sterility, absolute or relative, may be directly traced to fibroids of the uterus.

3. The menorrhagia associated with fibroids is dependent, in the main, upon the location of the tumors with respect to their proximity to the uterine cavity and the association with adenomyosis uteri and endometrial hyperplasia.

4. Elective appendectomy during the course of operations for uterine fibroids is to be considered only if the appendix is grossly abnormal or is involved in the gynecologic lesions.

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DISCUSSION

Dr. James Carey, Joliet: Dr. Kanter and Dr. Klawans are to be congratulated upon the extensive and thorough manner in which they have handled this subject.

In a rather large colored clinic at Northwestern an obscure symptom came to my attention which might not be classed as one. After interrogating a large percentage of patients who had fibromyomata of the uterus it was found that most of them complained of clots at the time of the menstrual period. I do not believe that is brought out in the textbooks. We know that normally menstrual blood does not clot. The only value of this symptom might be in the differential diagnosis of so-called functional uterine bleeding and very small submucous or the intramural types of fibroids.

Another thing which interests me particularly is the fact that the etiology of fibroids being so obscure—and with the more enlightened attitude or the light which has been thrown upon the subject—there might be some relationship between fibroids and the estrogenic factor. We do know that fibroids occur very seldom in the premenstrual life and seldom in the postmenstrual life. We have observed certain types of fibroids, usually not the pedunculated or intramural type, which apparently undergo a process of dissolution after the menopause, and also certain fibroids which increase in size during pregnancy. These two states are states of hyperestrinism. It is the hope that in the future quantitative tests may be perfected for the presence of estrogen and progestin in the blood, so that we may throw more light on the subject of etiology.

It is interesting to note in the series reported that we are advised not to remove the appendix. I believe that most gynecologists would be of the opinion that the appendix should be removed while the abdomen is open, unless it will jeopardize the life of the patient.

Bleeding after the menopause, even in the presence of fibroids, should be treated as carcinoma until proved to be otherwise.

Dr. Herbert Schmitz, Chicago: In 1936 I took the records of the Cook County Hospital for a period of the ten preceding years and made a study similar to that of Drs. Kanter and Klawans, on 3,129 cases which had hysteromyomectomies done at the County Hospital by the attending staff. I have a few of these conclusions here which I think may be of interest.

As to the radiologic treatment of myoma, I believe it is pretty well accepted that we divide myomas into four groups: the juvenile, under 18 years of age; those in the active menstrual period up to the age of 40; those in the age of the menopause from 40 to 55 years; and those over 55 years in the senile period. I do not believe that any gynecologist who is interested in irradiation advocates radiologic treatment of myomas in any group except the menopause group, with the one exception: a contraindication to the use of surgery. In the menopause age when a myoma with no other complication is discovered and the only symptom is bleeding, a curettage should be performed, and these patients recover in almost 98 per cent of the cases, so far as their symptom of bleeding is concerned. There has been no mortality in such treatment. If we can treat with x-ray in this group and avoid a mortality of from 0.5 to 2.5 per cent. I think radiation therapy has a place in the treatment of this condition.

As to the complications in our series of cases, there was chronic salpingitis in 834, hydrosalpinx in 118, tubo-ovarion abscess in 100 cases. The following table shows the complete list of all the associated pathologic conditions listed in the order of their frequency.

TABLE I

Chronic salpingitis	834	Pelciv endometriosis	1
Hydrosalpinx	118	Chondroma	1
Tubo-ovarian abscess	100	Sarcoma	1
Pyosalpinx	65	Anaplastic squamous cell carcinoma of ovary	1
Chronic pelvic peritonitis	61	Brenner tumor	1
Degenerated myoma	35	Gärtner's duct cyst	1
Intraligamentous myoma	20	Dermoid cysts of the ovary	20
Uterine pregnancy	11	Hematosalpinx	8
Pelvic abscess	7	Large simple cysts of ovary	6
Tubal pregnancy	5	Placental remnants	3
Placental polyp	3	Carcinoma of the cervix	2
Bicornate uterus	1	Gangrenous appendix	1
Retained stem pessary	1	Missed abortion	1
Papillary cyst adenocarcinoma of ovary	1	Carcinoma of fundus	1
Accidental tear of bladder	1	Accidental perforation of rectum	1
Thrombophlebitis	1		

Table II gives a complete list of the postoperative complications.

TABLE II

Wound sepsis	126	Parametritis	1
Postoperative pneumonia	9	Psychosis	1
Localized peritonitis	8	Acute pharyngitis	1
Pelvic cellulitis and abscess	8	Central nervous system syphilis	1
Vaginal hemorrhage	7	Accidental tear of bladder	1
Secondary wound suture	4	Erysipelas of back	1
Thrombophlebitis	3	Auricular fibrillation	1
Cystitis	3	Diabetes mellitus	1
Evisceration	2	Vesicovaginal fistula	1
Hematoma of wound	1	Bleeding from wound	1
Fecal fistula	1		

Reed and Bell's morbidity table shows a much higher percentage of femoral thrombosis than we had. The thing you must remember is that at the County Hospital we have far advanced and neglected cases. Our complications, morbidity and mortality will be higher than in private practice.

As for the 78 fatal cases in this series, the operations performed were: abdominal supracervical hysterectomy in five, abdominal supracervical hysterectomy, bilateral salpingectomy and oophorectomy in 71, abdominal supracervical hysterectomy with bilateral salpingectomy and unilateral oophorectomy in two. The cause of death in these cases was as follows: generalized peritonitis in 46.2 per cent.; surgical shock in 25.6 per cent.; secondary hemorrhage in 7.7 per cent.; pneumonia in 5.1 per cent.; embolism in 3.8 percent.; uremia in two cases; toxic goiter in two cases; injury to bowel and peritonitis, one; evisceration, one; cardiac failure, one; meningitis, one; and ischiorectal abscess, one.

In studies done by other men the figures and percentages are quite similar. However, in a private service there are very few complications and a very low mortality, which is impossible to duplicate in the County Hospital where one has so many associated pathological findings.

In doing this work I wanted to know whether our mortality was in keeping with other large series; the Mayo Clinic has a mortality rate of 1.2 per cent., our series is 2.1 per cent., Reed and Bell 2.0 per cent. I feel that with the far advanced and neglected cases we have to treat at the Cook County Hospital we have a very excellent mortality rate.

Dr. Frederick H. Falls, Chicago: I have been moved to get up and discuss this paper because of the statistics quoted by Dr. Schmitz and Dr. Klawans from the County Hospital. I have been on the attending staff since 1910. Most of the time I have been actively associated with the obstetrical and gynecological service. If one operates upon a fibroid uterus in the County Hospital and the woman is colored, about 98 per cent. of the time you will find complications present. The

reason that these papers do not show more complications is because the histories made at the hospital are meager and in many cases the complications were not recorded on the history, so that a man going over a series of cases six years later will not find associated pathological conditions. However, if you are an attending man at this hospital and expect to operate upon 300 cases of fibroid and get complications in only 50 per cent. you will be mistaken. That is what makes the mortality rate high.

One interesting thing has happened in our service in the last two years which I have never heard mentioned before. Hand-running we have operated on five cases of fibroid with ectopic pregnancy as a complication. Now, all the ectopic pregnancies that are admitted are supposed to go to the obstetrical service, but about half are sent to us by mistake and opened up. So in five cases one after the other we found ectopic pregnancy associated with a fibroid uterus and, therefore, in the presence of fibroid with bleeding it is well to keep in mind the possibility of this complication.

We find a certain group of fibroids in the County Hospital that are poor operative risks. Enthusiastic associates go to the medical wards and find one with chronic nephritis who has a fibroid and that patient is transferred over to the gynecological service for treatment. Do we dare to give her a general anesthetic? Will it raise the pressure way up? To avoid this we have done two things: We have operated under local anesthesia and with morphine and scopolamine as a basal anesthetic given in two doses, one hour and one-half hour before operation. We use one per cent. novocain with four drops of adrenalin during the course of the operation. We have operated upon a large number abdominally and in addition we have removed a good many fibroids vaginally under local anesthesia and by morcellation we have removed fibroids half way to the umbilicus and we feel this is a thing that should be known and practiced more.

It is an important thing to remember that a fibroid represents a benign form of degeneration of the uterus but nobody knows when the benign form leaves off and the malignant form begins. Nor is it possible to say in a given case that a bleeding uterus means an associated carcinoma of the cervix or the body of the uterus. Therefore it is important to do a vaginal examination very carefully, remove tissue for examination and curette the patient, particularly in those women at the menopause or possibly past the menopause, to rule out the possibility of a carcinoma. One of the advantages of the vaginal operation is that it gets rid of the cervix and the possibility of carcinoma occurring in the cervical stump. In those cases in which the cervix is left in, we cauterize the endocervix and the cervix in order to destroy the epithelium from which carcinona could develop.

The statistics quoted on fibroids and malignancies are frequently wrong. They are wrong for this reason: If a patient has a fibroid and it is removed and the patient re-enters the hospital with a carcinoma of the cervical stump, that goes in the statistics as a carcinoma of the uterus. No thought is given to the fact that that woman started out with a fibroid. If a woman comes in with definite fibroid and somebody puts a speculum in the vagina and sees a carcinoma of the cervical stump, that uterus ceases to be a fibroid uterus but becomes a carcinoma. If a woman comes into the County Hospital with a fibroid and is operated upon for that and if the pathologist opens up the fibroid after it has been taken out and discovers a carcinoma, that goes down as carcinoma of the uterus and the fact that she had a fibroid is lost sight of.

When you are dealing with a fibroid always keep in mind the fact that the patient is a potential carcinoma patient.

Dr. G. B. Callahan, Waukegan: This subject has been presented in such volume that those of us who have gone out to the smaller towns to practice are overwhelmed. It was my privilege while at Cook County Hospital to have assisted in some of the 3,000 cases mentioned by Dr. Schmitz. I was sorry that more was not said about treatment as Dr. Klawans omitted his summary.

One of my senior medical schoolmates came to me one day with a letter that had come from a gynecologist in the south, saying that they had done a hysterectomy on his financée because of the findings of encroachment upon the cavity of the uterus. There had been a fibroid present for some time and, of course, we cannot judge from the meager history given whether she ever had a chance to bear a child had this surgeon only enucleated the fibroid. It did not sound reasonable to me that every uterus with fibroid should be removed where there were symptoms even of encroachment upon the uterine cavity. We do a cesarean section and cut all the way into the uterine cavity with a much larger scar than from a fibroid excision, and we send those patients home to have another pregnancy and another cesarean section. I did enucleations, allowing thereafter pregnancies, normally and safely. Many years later than my schoolmate's news I was pleased to hear one man say that in the child-bearing woman he enucleates the fibroid, makes the repair and allows her to bear children. This man, Mr. Victor Bonney of London, is of mature and wide experience, comparable to our own Dr. Barrett.

I would like to know whether all of these fibroids were removed by hysterectomy and not enucleated, because those of us on the outside never see your volume and we wonder what we should do for our patients.

The reason I raise such a question is because these reports in the literature give the surgeon support for choice of hysterectomy that might be avoided. Could we not wisely in suitable cases enucleate fibroids, repair the uterus, allow pregnancies, then observe for possible malignant changes mentioned by Dr. Falls and treat as indicated?

Dr. A. H. Klawans, Chicago (in closing): I am sorry Dr. Schmitz did not enumerate the number of appendectomies in that series of deaths.

In answer to Dr. Callahan we stated that infertility does occur as a result of fibroids. Also, we do myomectomies, but I must repeat for emphasis that our position at the County Hospital is different from

yours. In our patients there is a great amount of associated pathological conditions, so because of the salpingitis, tubo-ovarian abscesses, pelvic adhesions, and because these women cannot be pampered like our private patients and because these women must get out and work for their livelihood, we must do what we can to cure them. We could give them two years of treatment so that they could be operated upon and myomectomy done, but they are economically unable to go through such a long treatment period.

Dr. Carey spoke of routine appendectomy as if he were in favor of it. I think five years ago we did appendectomy routinely. Recently we have been looking at the appendix and if it is injected we take it out, otherwise we leave it in. I understand that at the Mayo Clinic they are no longer doing routine appendectomy, removing the appendix only where it is injected or involved in the morbid gynecologic conditions.

MULTIPLE UNILATERAL CRANIAL NERVE PARALYSES

Report of Two Cases Due to Suppuration in the Presence of Diabetes

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Two cases of multiple unilateral cranial nerve paralyses are herewith reported because of several factors. These are as follows: the number of nerves involved, i.e., Case 1 and Case 2 have eight cranial nerves implicated; both cases occurred in young adults who have gross evidence of suppuration in the temporal, maxillary and sphenoid bones as well as nasal sinuses and have a severe diabetes; both cases were in deep coma and in a very serious condition; both cases received sulfanilamide and insulin and responded favorably.

REPORT OF CASES

Case 1. Abstract. A twenty-six year old male with diabetes mellitus went into coma two days after a tooth extraction. While being treated he developed paralysis of cranial nerves II to IX, all on the right side. A non-hemolytic streptococcus was cultured from his maxillary sinus and later from his draining ear. Although his diabetes was fairly well controlled and prontosil apparently controlling his infection, the bony involvement continued until a surgical petrositis developed. Following operative drainage the condition slowly healed. At the present time the palate is closed in with a plastic operation. Vision is gone from his right eye, but some lateral (abducens) eye motion is returning. Facial movements on the right side are also possible but very limited. The II and III cranial nerves remain completely involved.

History. E. S., aged 26, a truck driver for the past two months was admitted to Cook County Hospital in a medical ward in coma, on August 3, 1937. His past history was negative with the exception of diabetes mellitus since June, 1937, when he developed loss of weight, weakness, polydypsia, polyphagia, polyuria and drowsiness. He was then put on a diet without insulin. Family history was negative except that his mother died of bronchial asthma at age of 53.

Two days after a tooth extraction he gradually went into coma and was sent to a hospital. While there, he was treated with insulin and intravenous fluids. He then developed paralysis of the right side of his face, ulceration of the roof of his mouth and severe headache. He was then admitted to Cook County Hospital on August 3, 1937.

Physical and neurological examination on August 4, 1937, revealed a comatose patient with acetonic breath. The temperature was 102.2°, pulse 120 and respiration 14. The right side of his face was flaccid and immobile. The left external auditory meatus was filled with wax and the right tympanic membrane was hemorrhagic and distended with a sero-sanguinous exudate. The left pupil was larger than the right and reacted to light and accommodation but not consensually. There was a paralysis of right lateral gaze. The right pupil was fixed to light and accommodation and reacted consensually. There was a ptosis of the right upper lid and a mucopurulent conjunctival discharge. The entire right side of the face was anesthetic to all forms of sensation. The periorbital tissues on the right side were swollen. There was no vision in the right eye. There was slight edema and blurring of both optic discs. A sero-sanguinous discharge exuded from the right nostril. Sordes were present on the lips. The right hard and soft palate were sunken, retracted and black with greyish edges. The throat contained a greyish exudate. Swallowing of both liquids and solids was difficult. The neck was markedly rigid. Cervical glands were palpable bilaterally. There were occasional rales in the apex of the right lung. A systolic murmur was heard at the apex of the heart but otherwise the tones were regular and normal. In the abdomen the liver was just palpable. Three days later examination revealed a complete areflexia but no paralysis of the extremities. The II to the IX right cranial nerves were completely paralyzed and the XI was questionably involved. Laryngeal examination was normal. There was a slight rotatory mystagmus to the left on vertical gaze.

Laboratory examination revealed: four plus sugar, acetone and diacetic acid in the urine. Spinal fluid examination revealed a turbid fluid: four plus Pandy and 450 polymorphonuclears per cmm. There was no block and no organisms were present on smear or culture. The blood culture was negative. The white blood count was 20,650 of which 79 per cent. were polymorphonuclears. A hemolytic streptococcus was cultured from the maxillary sinus and from the draining ear. A streptococcus viridans was cultured from the mastoid. All other laboratory tests were normal.

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Course. Repeated spinal punctures were performed and the diabetes was controlled with insulin, 60-70 units per day, and diet. The otitis media and maxillary sinusitis were treated locally. Although the patient improved subjectively, he still showed a low grade fever in spite of 49 grams of sulfanilamide given from 8/7-8/30/37. The palate sloughed out gradually and on September 16 he was transferred to the Ear, Nose and Throat Ward. Here he received 12 grams of sulfanilamide from 9/16-9/26/37. The spinal fluid at this time showed a four plus Pandy and 900 pus cells. The left fundus and visual field was normal. On September 24, the right mastoid region became tender and roentgen examination revealed bone destruction in the squamous portion of the temporal bone. Spoken voice returned to the right ear. Alcohol was introduced into the right external ear and it appeared in the right pharyngeal cavity, indicating a fistula at the base of the temporal bone. An exacerbation occurred and the diabetes became uncontrolled. The spinal fluid on September 25 showed 15,000 polymorphonuclears. On September 28, a right mastoidectomy was performed and a large abscess in the petrous portion of the temporal bone was drained. From then on the temperature dropped and the patient did well. Within two months hearing increased in the right ear and pain sensation increased in the second and third divisions of the V cranial nerve. On December 28, the fistula extended from the sphenoid sinus at the base of the skull into the ear and was well rounded, clean and practically free of drainage. The right maxillary sinus was pus free. The right ear still continued to drain but the mastoid wound had healed. At this time the right II, III, IV, VI, VII, and IX cranial nerves were completely involved while the right V and VIII cranial nerves were only partially involved.

He was discharged from the hospital February 4, 1938, five months after admission, afebrile and with his diabetes controlled. The palate had been filled in by means of a plastic operation. At this time a neurologic examination showed complete blindness in the right eye, loss of all motion in the external ocular muscles of the right eye except for some lateral movement, ptosis of upper lid and limited facial movement. Sensation over the right face (V) had returned.

Case 2. Abstract. S. T., a white adult female, thirty-five years old, was admitted to a medical ward in diabetic coma. After relief of the coma she developed a gradual paralysis of II to IX (inclusive) cranial nerves on the right side. Headache was severe and right sided. Signs of suppuration gradually appeared in the maxillary and sphenoid sinuses and finally localized as an osteomyelitis of the temporal, maxillary and sphenoid bones. Hemolytic streptococci were found in the maxillary sinus. Mastoiditis and erysipelas developed. The mastoiditis required surgical therapy. Although prontosil seemed to control the infections, the bony portions required drainage because of actual pus. At the present time, the right eye is blind and there is still a complete paralysis of the right III, IV, V, VI, VII and IX cranial nerves together with a partial VIII on the right side. Sulfanilamide was used for a period of about two months intermittently (61 grams).

History. S. T., a white adult female, thirty-five years of age, was admitted to the Cook County Hospital in coma on October 10, 1937. Her history obtained later was essentially negative except that she was a diabetic and had been taking insulin for five years. She had been married twice and had one son. Physical and neurologic examination revealed a comatose patient with an acetonic breath. The temperature was 98.6, pulse 100 and the respirations 28; the blood pressure was 70/40. Her eyeballs were softened but the pupils were normal; the tongue was coated and the throat was red; there was no neck rigidity; the heart and lungs were normal; neurological examination was negative; multiple needle marks were present on the upper extremities; the urine had a specific gravity of 1,020, two plus albumin, four plus sugar and four plus acetone. The diagnosis of diabetic coma was made and treatment instituted with gastric lavage, fluids, alkalies and insulin.

Course. On October 11, 1937, she was out of coma. Within a week she had been controlled properly with insulin up to 55 units per day and was placed on a diet preparatory to being discharged. She then began to act peculiarly, i. e., irritable, uncooperative, disturbed, and on October 19 developed a diplopia and complained of severe headache. Examination revealed a swelling of the right eye with a right lateral rectus palsy. She complained of a burning and numb feeling on the right side of her face and this was soon followed by anesthesia over the right face. The right motor fifth gradually became paretic. Within the next three days, October 22, 1937, the right III to IX cranial nerves (inclusive) were paralyzed with the exception of the ophthalmic division of the V and VIII cranial nerves. Herpes Zoster had also developed on the right side of the face in the distribution of the first and second divisions of the V nerve. Her temperature rose to 102°. The left pupil was larger than the right and both reacted well to light, accommodation and consensual reaction. The cervical glands were tender on the right. The right infraorbital region was tender and swollen. The hard palate on the right side showed signs of ulceration. The soft palate deviated to the left. There was a moderate right exophthalmos. Fundus examination was normal at this time. The findings were compatible with a possible sphenoiditis and the patient was transferred to the Ear, Nose and Throat Ward. Three days later, on October 26, an optic neuritis developed with an occlusion of the central artery. The disc was pale and edematous, the veins were indistinct and arteries were not seen. There was a suggestion of cervical rigidity. At this time a spinal fluid examination showed no abnormalities.

Pus exuded from the right mavillary and sphenoid sinuses. Occipital headache which was complained of was relieved when the sinuses were irrigated. A foul purulent discharge developed in the right nostril. The right canine fossa appeared full. The right infraorbital area became more indurated and finally fluctuated on November 8, 1937. On the next day, November 9, bony sequestrae were removed from the olfactory sulcus in the sphenoid region to facilitate drainage.

The right middle turbinate was also removed. Although the patient felt better, she continued to have a low grade fever up to 101°. In hearing tests, the Weber did not lateralize while the Rinne was positive on the left and the whispered voice was better on the left. Small fistulae developed in the right periorbital and infraorbital regions which continued to drain intermittently. The temperature again began to rise and a right temporal and parietal headache developed which radiated to the right ear. Another fistula developed lateral to the right upper third molar leading into the antrum. Culture from the antrum revealed hemolytic streptococci. Swelling and tenderness appeared in the right temporomandibular joint and fluctuation appeared over the zygoma which opened and drained, the fistula also leading into the antrum. The right ear was now draining. The patient gradually felt better and the swellings subsided. Examination on March 3, 1938, revealed a complete paralysis of the II to VII and a paresis of the VIII and XI cranial nerves on the right side. The right facial nerve gave a questionable contraction only to an increased galvanic current.

On March 22, 1938, she developed pain in the right mastoid region with a temperature of 104°. A mastoidectomy was performed and the symptoms were relieved. A week later an erysipelas developed which was relieved by prontolyn.

From October 26, 1937 to April 25, 1938, the patient received a total of 209 grams of prontolyn. The patient then made a gradual recovery with the exception of the above cranial nerve palsies. She was discharged on June 9, 1938, eight months after admission into the hospital. The pertinent laboratory findings were as follows: blood sugar 475 mgm.; hemolytic streptococci in the maxillary sinus, face and ear; x-ray showed, on December 9, 1937, erosion of the superior wall of the right maxillary sinus and on March 16, 1938, opaque maxillary, ethmoid and frontal sinuses on the right side with clouding of the right petrous tip and right mastoid. All other tests were normal. Additional Data on Case 2, S. T.

From June 9, 1938, the time of her discharge until September 8, 1938, when she was readmitted to a medical ward for the purpose of readjusting her diet and intake of insulin, she was seen in the clinic. Two weeks prior to her second hospital admission she discontinued her diabetic diet and stopped taking insulin. While in the hospital (second admission) she gradually developed acidosis and coma. Despite all therapy she died nine days later on September 17, 1938. Postmortem examination done three hours after death showed the following macroscopic findings: early abscess of right temporal lobe with rupture into the subarachnoid space; thrombosis of right lateral sinus; chronic osteomyelitis of the right sphenoid bone; chronic atrophy of the pancreas; focal pneumonia of right lower lobe and chronic ulcerated keratitis of the right eye. The essential microscopic findings were as follows: focal encephalitis with small focal abscesses of right temporal lobe with a poorly defined capsule formation; considerable perivascular round cell infiltration in the regions of the poorly defined capsule; marked thickening of the meninges with cellular infiltration where the polymorphonuclear and gitter cells have broken through into the subarachnoid space adjacent to the abscesses in the temporal lobe; the brain parenchyma around the abscesses show acute degenerative cellular changes with marked infiltration of the Virchow Robin space of the blood vessels.

COMMENT

Multiple unilateral cranial nerve paralyses occur rather infrequently. This is especially true when seven or eight nerves are involved. Unilateral paralysis of all the cranial nerves from the first to the twelfth may occur in pyogenic basal meningitis, syphilitic basal meningitis, malignant meningeal intracranial neoplasms (melanoma, carcinoma lymphoma, and chordoma) and cerebral meningo-radiculitis. Multiple unilateral cranial nerve paralyses are liable to occur from lesions implicating those regions of the cranial base where two or more cranial nerves are grouped together. The following groups have been previously described: 1. Sphenoidal fissure or syndrome of the orbital space involving the II, III, IV, ophthalmic V and VI cranial nerves: 2. Cavernous sinus syndrome involving the III, IV, VI and occasionally the ophthalmic division of the V cranial nerves; 3. Syndrome of the outer wall of the petro-sphenoidal fossa involving the II, III, IV, V and VI cranial nerves; 4. Syndrome of the apex of the petrous portion of temporal bone producing a gasserian ganglion and abducens involvement; 5. Syndrome of the internal auditory meatus resulting in a paralysis of the VII and VIII cranial nerves; 6. Syndrome of the jugular foramen resulting in involvement of the IX, X and XI cranial nerves; 7. Retroparotid syndrome resulting in paralysis of the IX, X, XI and XII cranial nerves and cervical sympathetic. There are several other possible combinations of multiple unilateral cranial nerve paralyses.

In our two cases there were eight cranial nerves involved in each instance. Both cases had not only a severe diabetes but a marked pyogenic infection of the mastoid, temporal and sphenoid bones as well as a frontal, sphenoid and maxillary sinusitis. It is apparently easy to realize why so many cranial nerves were involved in our cases because all of the right anterior, middle and a portion of the posterior fossae were involved. The diabetes was without doubt the predisposing factor for such a massive inclusion of the eight cranial nerves. This was particularly brought out in Case 2, where a recovery

from the active infectious process had taken place, but when the patient neglected her diet and stopped taking insulin, the infection became active again and produced multiple abscesses, suppurative encephalitis and meningitis. We believe that sulfanilamide was the drug which prevented death in these two cases. Previous to the administration of the drug and despite the fact that the diabetes in each case was very well controlled, their general condition was grave because of the overwhelming infection. It can be said that sulfanilamide decreased the invasive capacity or virulence of the streptococci found in our cases. These two cases are presented as additional evidence of the therapeutic value of prontosil or sulfanilamide.

SUMMARY

1. Two cases of multiple unilateral cranial nerve paralyses (II to IX cranial nerves inclusive on the right side) with diabetes and suppuration are presented.

2. Both patients recovered from the overwhelming infection with prontosil or sulfanilamide, surgery and control of the diabetes.

3. The second patient died subsequently of a reinfection with suppurative encephalitis and focal abscess formation. The latter probably was due to neglect of her diabetes.

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WHAT CONSTITUTES A PSYCHIATRIC PROBLEM IN GENERAL PRACTICE

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Psychiatry in the past has been considered the stepchild of medicine. Doctors in their medical training were careful to sidestep the subject, and even today in the medical schools we still find great resistance on the part of the faculty and student body to an adequate teaching program. It is only within recent years that psychiatry has been given any recognition, but where it has been recognized, it has been expanding and showing development. In the beginning this branch of medicine was concerned almost exclusively with the care of the insane and with certain court cases, but it has developed now to include the treatment not only of the clearly defined neuroses, but also the organic-appearing problems which have previously been the exclusive concern of the internist and surgeon.

Read by Frances Hannett, M. D., before the Council of Medical Women, March 22, 1939, Chicago.

Before the days of Hippocrates the brain or "soul" was divorced from the soma. Hippocrates was the first to call attention to the fact that they had to be considered as a unit, and that, "from nothing else but the brain come joys, despondency and lamentations." During the Middle Ages this body-mind unity was lost sight of, not to reappear until Sherrington and Cannon laid the groundwork experimentally for the concept of a total organism with integrated functions. Sigmund Freud in Vienna and Adolph Meyer in America developed concepts of personality which integrated organic phenomena and functions of the organism with those of the so-called mind. Today we no longer speak of the body and mind as independent variables. They are each of them manifestations of a single continuous process.

To give some idea of what has been happening in this respect we would cite Dunbar's book, Emotions and Bodily Changes, published in 1935, in which she reviews 2,251 articles and books published between 1910-1933 dealing with psychosomatic interrelations; while, only this month, a new periodical entitled Psychosomatic Medicine has made its appearance. The editorial board of the latter includes psychoanalysts, psychiatrists, internists, physiologists and psychologists.

All this may serve to indicate why psychiatrists cannot and do not disregard various dysfunctions, disorders and organic changes of the body and why to psychiatrists it seems highly necessary for the internist, surgeon, pediatrician and gynecologist not to disregard the emotional or so-called mental symptoms in organic disease. Bryan has classified physicians into three groups with respect to their attitude towards emotional phenomena in their patients:

1. Those who have the idea that all psychic manifestations are of organic nature; i.e., the pure organicists;

2. Those who have the idea that all psychic manifestations are purely psychological and are no concern of the physician;

3. Those who have the idea that all psychic manifestations are both organic and psychological in such terms as have already been discussed.

If the fact of the syphilitic infection were alone sufficient to explain the manifestations of general paresis, how would we account for the other facts that some paretics show depressions, some grandiose ideas, some simple dementia, and some only a mild neurotic picture? In each instance the infection is the spirochete but in each case we are dealing with a different psychosomatic integration with a different life history in respect to everything except the luetic infection and the result is a different picture of the disease. The same could be said of delirious states in various febrile conditions.

Doctors would be saved much of their complaining about quacks, faith healers, etc., if they were always as ready to investigate the emotional problems of the patient in the interest of his general health as the "irregulars" are ready to exploit them for their personal profit.

The principles operating in somatic and psychological medicine are not so different as they may seem on the surface. Wm. A. White used the following example as a demonstration of this point: he compared the increased leucocyte count, as a defense reaction of the tissue to infection, with certain delusions which serve a similar function at a psychological level. If we take the case of an elderly man whose failing memory and increasing inability to concentrate cause him to make errors in his work, he will, when called to task about it, believe that the mistakes have been made by his enemies who wish to discredit him. This delusional idea protects him from recognizing his own failing powers. One defense (the white blood count) serves the integrity of the body; the other, the integrity of the individual's concept of himself.

The trend in medicine as a whole has been away from general practice towards specialization. This has its advantages in that one may be a better nose and throat therapist but at the cost of being a less reliable diagnostician of acute abdominal conditions. Medical knowledge has increased so rapidly as to make it almost impossible to be a good "Jack of all trades." But this trend has the disadvantage of segmenting the patient into liver, gall-bladder, tubes and mastoids with the mind as a foreign body, which unfortunately cannot be ignored or resected. The patient as an entire personality is lost sight of. In contrast to this general trend toward specialization psychiatry is beginning to see the need for a more integrated approach to the patient; to see him as an entity. Psychiatrists have been criticized for their reluctance to examine their patients from head to toe and the usual criticism hurled is that they have forgotten to be doctors. This is not the case, for any competent psychiatrist will first want to be certain about the physical health of his patient and will take the necessary steps to do so. It must be pointed out here that the psychiatrist usually finds it advisable to have the medical examination made by another physician particularly if psychotherapy is being contemplated. The reason for this roundabout procedure is that in certain instances the emotional problems involved are such that treatment is jeopardized by the too intimate contact necessary during a complete physical examination. Perhaps, as Menninger has pointed out, part of the misunderstanding between medicine and psychiatry may be laid at the doorstep of the psychiatrists who have not always remembered that they were doctors first and psychiatrists afterwards, and that they must speak to their fellow physicians in a common language and not in psychiatric jargon. Perhaps, too, if psychological factors in disease had not been made the basis of a so-called religion, one of the tenets of which is that all doctors, other than psychiatrists, were wicked, physicians might not have been so slow to acknowledge the validity of psychiatry.

On the other hand doctors are unable to accept the notion that without definite experimental laboratory proof, emotional factors can cause disease. This insistence upon laboratory proof can also be looked upon as a species of religion. Nevertheless, no one of us hesitates to accept the validity of the idea that emotional factors can cause such bodily changes as blushing with embarrassment, gooseflesh and diarrhea with fright or anxiety, and various types of physical response to sexual stimulation. It is but a step further to see the relationship between emotional disturbances and hyperthyroidism, angina pectoris, ulcer, etc. For the strictly experiment-minded it may be comforting to know further that recent laboratory work on the hypothalamus and with the electro-encephalograph is beginning to elucidate some of the more fundamental

questions of interrelationship between psyche and soma.

So far we have outlined only the need to see the relationship of physical and emotional factors in disease. Now what is a psychiatric problem? By definition psychiatry is that branch of medicine which deals with the investigation, diagnosis and treatment of disturbed personality functions. Such a definition is not very specific, for much depends on what is meant by a "disturbed personality." Of course, there is little question about the major psychoses or the frank cases of hysteria, obsessional neurosis, and anxiety neurosis. But it is difficult to say what should be considered a personality disturbance. Broadly we can state that all factors which interfere with the individual's sense of security in himself and in his relationships with others produce to a greater or lesser degree a disturbance of the personality. It is this insecurity which constitutes the disturbance of the personality. It must be remembered that insecurity only seldom becomes manifest in pure culture, to be recognized as such. More often it appears, as various distortions of conduct, thinking and feeling whose purpose can be discovered as the concealment of the insecurity from the self and from others. The elderly man already cited is an example of this.

The question still remains how disturbance in personality can manifest itself organically. Examples may be helpful at this point.

In certain states of insecurity the individual tends to react defensively with anger, which anger however, for the very reason of the insecurity, cannot be expressed. Imagine a man resentful of his inferior status expressing even justified anger towards the superior on whom his job depends. Chronic suppression of such reactive anger may have as one of its consequences chronic vasomotor stimulation with so-called essential hypertension as the final diagnosis. In such instances the hypertension is the final manifestation of the personality problem.

Recently extensive psychiatric study of cases of peptic ulcer, colitis, constipation and diarrhea, asthma and endocrine disorders have been made. While not all the data is as yet published, there is evidence which points to a distinctive personality structure for each type of physical disorder. Suppose we take the instance of gastric ulcer. It is a well established clinical fact that many ulcer patients are tense, go-getting, efficient, aggressive, high pressure types of individual who give the outstanding impression of being self-sufficient. As one of the etiologic factors of ulcer, the role of nervous tension is given serious consideration among a number of other possible causes or contributing factors. On close psychological investigation it is found that the so-called nervous factor is really a conflict in the patient between his aggressive self-sufficiency and an underlying insecurity which has attached to it desires to be cared for, supported and loved. In other words, the individual's personality disturbance on the psychological level manifests itself in a manner which denies the patient's insecurity to himself and to the world, while his organic symptoms proclaim his insecurity as a child chronically threatened by hunger. In such cases the childish insecurity and need to be cared for seems never to have been overcome but can express itself in the physical language of unsatisfied hunger. This psychological factor in the etiology brings about a chronic state of gastric stimulation with attendant hypermotility and excessive gastric secretion which then become the direct physiological factors in the causation of ulcer.

Now what symptoms may be considered to have emotional significance? In general the answer would be similar to the one Osler gave with respect to syphilis: "to know syphilis is to know medicine;" to know psychology is to know medicine. Blisters have been raised by suggestion and warts have been cured by suggestion. But there are certain symptoms which are more common than others in relation to disturbances of personality.

Prominent are the cardiac symptoms: palpitation and tachycardia with or without precordial oppression, and sometimes hyperpnea. In the absence of demonstrable pathological changes or toxic factors the symptoms are to be considered functional in nature and in most instances will be found in association with anxious thoughts and feelings. One of us has recently seen a patient with the above symptoms which were first diagnosed "angina pectoris or coronary disease." The history is as follows:

Further investigation revealed no organic pathological findings. However, the patient was convinced that he had coronary disease, and prepared himself for death. After a year of psychotherapy he was much improved in health, was carrying out a full-time work program,

and was no longer making reference to his illness. The psychological background was discovered to be intense hostility towards his father whom he had striven to emulate professionally and who had died of coronary disease at the height of his career. The patient was unable emotionally to separate his father's success which he coveted, from the apparent outcome of that success—heart disease. One might say that for this patient the wages of success were death by heart disease, since success meant competition with his father.

The gastrointestinal tract is astonishingly susceptible to emotional disturbances. Changes in secretion, motility, and gastric rhythm may be seen. We have already given one instance in which emotional factors operate hand in hand with the organic ones—gastric ulcer. Since 1880 nervous indigestion has been considered a functional disorder. Charcot in the late 19th century was famous for the diagnosis of colitis, the fashionable nervous disorder of the day. Axel Munthe describes this well in his book, The Story of San Michele. We must not forget that Charcot recognized colitis as functional in nature, yet he was the leading organicist of his day. Sialorrhea, polydypsia, bulimia, anorexia, nausea, vomiting, constipation, diarrhea, abdominal cramping—all these may also be manifestations of emotional disturbances. For instance: a recent history of constipation, especially if subjective ideas of serious illness are associated with it, must bring into consideration the possibility of the existence of a serious depression as well as the usual differential diagnoses of organic pathology. Anorexia may also be associated with depressions or anxiety states. Following are cases in illustration:

A young woman of 19 was referred for attacks of morning nausea and vomiting, frequent stools and lower abdominal pain. She had had three admissions to the hospital with attendant improvement only to relapse immediately on discharge. Organically she was sound. Psychiatric study revealed that she was preoccupied with ideas of impregnation which was both desired and rejected. Four weeks later she had her first hysterical convulsive seizure which inaugurated another attack of vomiting and anorexia. The periods between attacks were entirely free from any symptoms. This patient had been under medical investigation a number of years before emotional problems were suspected.

Another case is that of a brilliant young man of 23 who has been complaining for four years of a multitude of physical symptoms. The patient had a deprived childhood. He had lost his own mother when about a year old. His father had remarried but deserted the family periodically, leaving the patient with a not too kindly step-mother. Since the death of the father five years ago, the step-mother has had no contact with the patient and writes him only indifferent, infrequent letters. He has no other family ties. He has financed his way through school by working and earning scholarships. His illness began in his junior year of college when he became increasingly disturbed about his constipation. He was examined medically and the findings were negative. Some time later he began to have vague discomforts in the region of the heart which he interpreted as beginning signs of heart trouble. This idea was followed by vague gastrointestinal symptoms which he felt were a sign of cancer. Examination at this time revealed no pathological organic condition of any kind. He was reassured and felt fairly well during the next year at school. During the year preceding his coming to Chicago his symptoms became increasingly severe, and the attacks more frequent. En route to Chicago he was disturbed, felt that he would not be able to do the caliber of work at the University which he wanted to do, was depressed and contemplated suicide. On arriving here he came into the clinic asking for help with his constipation and his abdominal cramping, these being the prominent symptoms at that time. Physical examination was again negative and he was referred for psychiatric study. He was seen to be a very tense person with marked feelings of inadequacy and great apprehension for his accomplishment at the University. He had tried to solve his conflict through religion but was unsuccessful. His symptoms fluctuated from being vague discomforts to severe preoccupations about serious and incapacitating illnesses. They were always worse when he had to meet some outside situation which was difficult, or when there had been some misunderstanding between himself and his friends. The investigation of his generally tense attitude revealed chronic resentment towards his difficult lot. Every acute difficulty in his life accentuated his resentment which reflected itself in gastro-intestinal spasm.

In the genitourinary and gynecological fields we see enuresia, cystitis, nonspecific urethritis, polyuria, impotence, frigidity, dyspareunia, dysmenorrhea, amenorrhea, sterility, functional bleeding, vague pelvic distress, etc., all of which may be due to either organic or psychic causes. It is a matter of general observation that enuretic girls are likely to be aggressive and tom-boyish; while enuretic boys are apt to be passive, intimidated youngsters. Psychotherapy, which deals with emotional problems which on the one hand sissify boys and on the other, masculinize the girls, succeeds simultaneously in eliminating the enuresis though this symptom is not directly treated. It is obvious from this that the symptom must be related to the problems of the personality and this is actually seen to be the case when we know the details of the developments during psychotherapy.

It is a frequent occurrence that after years of sterility pregnancy ensues shortly after the adoption of a child. All of us have encountered cases of amenorrhea in the newlywed which was not caused by an actual pregnancy but which was psychologically related to either a fear or a wish for pregnancy. Recent studies have indicated a marked parallelism in the variations of the psychological attitudes of the female towards her sexuality and the several phases of the ovulation cycle. Polyuria is frequently an anxiety symptom and cases of diabetes insipiduus must be scrutinized for possible psychopathology.

Recently one of us treated a case in which the chief presenting symptom was a peculiar throbbing sensation in the region of the clitoris. This was being treated unsuccessfully by the insertion of vaginal tampons by the family physician. It turned out to be a masturbation problem with many other emotional implications and yielded only to prolonged psychotherapy.

Impotence in the male is often treated by the passage of sounds and by prostatic massage on the assumption that there is something wrong with the ejaculatory ducts but most cases of impotence are of psychological origin. In many instances fear is the chief obstacle and reassurance may be all that is required, though it must always be remembered that there are more severe types of cases.

In obstetrics there is a growing conviction that hyperemesis gravidarum is largely functional in origin and certain cases of eclampsia are under suspicion.

The case can be cited of a patient who during her first pregnancy was threatened with the need of a therapeutic abortion because of the severity of her symptoms. The consulting obstetrician in his interview with the patient asked her the simple question, "Do you really want your baby?" The patient's response, somewhat angrily, was, "Why of course, I do." The symptoms disappeared. It is obvious from the patient's response that the consultant's question had hit the mark. She was discovered in her rejection of the pregnancy and her pride could not tolerate this. She recovered from her symptoms as a substantiation of her denial of the rejection. This is a relatively simple case but it is an index to the fact that the emotional attitudes of the patient cannot be forgotten in any case.

For many women parturition constitutes a threat of death and is the reason for their fear of pregnancy. The popularity of "twilight sleep" has to do with this extreme anxiety. In some instances the birth of a child is so full of disturbing meaning to the patient that the only solution for the conflict is the postpartum psychosis. Reactions like this are frequently mistaken for toxic exhaustive deliria but actually many of them are schizophrenic episodes which in some cases develop into chronic mental disease.

In the ear, nose and throat field aphonia and dysphonia are interesting symptoms. In the absence of possible physical causes such as pathological manifestations of the recurrent laryngeal nerve, bulbar palsy, myasthenia gravis and local lesions of the vocal cords, hysterical causes must be thought of. Sometimes mutism is mistaken for aphonia and this symptom may be the presenting one in a developing schizophrenia.

Beginning paranoid symptoms in a middle aged or elderly person might be adequately treated if it were discovered that the hearing was failing and proper measures such as lip reading instruction or mechanical hearing devices, were employed.

Telescopic fields of vision and sudden complete blindness are strongly to be suspected as of hysterical origin. Blepharospasm, ciliary spasm and some cases of muscular imbalance, in the absence of other findings, are also suspicious.

In dermatology emotional factors are very important and may contribute to disorders as simple pathologically as dermatographia, or as complicated as psoriasis and lichen planus. Pruritus, urticaria and neuro-dermatitis are some of the more common neurotic manifestations seen in a dermatological practice. It is significant that in Dunbar's book, 37 pages are devoted to abstracts of articles on skin disorders of psychic origin. The appearance and disappearance of psoriatic lesions is closely connected with the fluctuations in the emotional state of the patient.

In illustration is the case of a woman whose lesions appeared with each attack of depression and disappeared with the depression when the latter was replaced by the intervening obsessional neurosis.

As mentioned previously detailed psychological investigations now are being made on the problems of asthma and hay fever. There is reason to believe that psychic factors are importantly related to the special sensitivities of the patient. Moos reports 16 cases of asthma in which the typical symptoms of asthma as well as the laboratory findings of Charcot Leyden crystals and Curschmann spirals and increased eosinophilia were lost under psychotherapy. The general statement might be ventured that in these

conditions both allergic and psychic factors are responsible and that the two factors have a complementary relationship in producing the symptoms. That is, the greater the allergic factor the less emotional disturbance is needed to precipitate an attack and visa versa. This really touches on a central feature of the physical manifestations of neurosis, namely, that the neurotic symptom tends to express itself by way of an organ or tissue which is organically susceptible.

All who specialize in surgery recognize the great importance of psychological factors, even in those cases in which there is no doubt of the surgical changes. It is this factor which intuitively the surgeon is considering among others when he speaks of preparation for surgery in its broadest sense and when he is searching for the cause of a collapse following an uncomplicated operation.

As recently as ten years ago the unquestioned treatment of thyroid over-activity was removal of the thyroid gland after suitable preoperative preparation. Today the situation has changed and it is only after considerable deliberation that thyroidectomy is recommended. This change has come about as the result of postoperative observations that in many cases there is a recurrence of the very symptoms for which operation was originally recommended. In some instances second operations were followed by the same results. Such cases under psychotherapy have been found to improve. Bram, studying 5,000 cases of thyroid hyperactivity, found that 90 per cent. had severe psychic trauma preceding the onset of the disease. In only four per cent. of this series was focal infection thought to be a cause and in three per cent. the use of iodine or thyroid extract were possible factors. We may at least say that in many instances the treatment of the emotional problems in addition to rest will make thyroid surgery unnecessary. In one of our large Chicago clinics no patient with thyroid over-activity is operated upon without first being examined by a psychiatrist for the purpose of evaluating the emotional situation.

Menninger's article, written in 1934, entitled, Polysurgery and Polysurgical Addiction, deals with the psychological factors in multiple surgery and points out that many persons resort to surgery time and again for the gratification of morbid needs. One striking example given in this article is that of the patient who undergoes multiple plastic operations. Menninger says: "It is very striking in studying the surgical literature that the plastic surgeons themselves recognize 'a morbid neurotic craving on the part of the patient to have something done' to correct a defect which they rarely evaluate objectively." Blair and Brown advise caution in the correction of slight defects to which the individual seems to attach an exaggerated importance. They mention cases which are successfully treated, yet the results were displeasing to the patient.

Many abdominal operations might often be avoided if psychological factors were taken into account.

Recently a surgical colleague asked for advice about a girl on whom he had operated upon three times. She had returned with symptoms which seemed to indicate the need for a fourth operation. Twice previously the diagnosis had been "adhesions" and each time little more than a laparotomy had been necessary. He was advised against intervening again. However, the patient was operated upon elsewhere. The report of the findings in this operation were negative.

Even at the risk of making the problem seem more complex we must state at this point that no physical symptom per se can be used to make a diagnosis of neurosis. The single exception is the glove and stocking anesthesia of the classical hysteric. All the other physical symptoms which have been indicated may be due to either organic or psychic causes. This is mentioned particularly as a caution against giving way unwittingly to the exasperation which we all tend to feel when in some cases our diagnostic powers have failed. In such cases the emotional factors most certainly should be considered but the tendency to wash our hands of the case after a psychiatric referral has been made must be avoided. One case will illustrate the point.

A male patient, who had been studied carefully by internists and ear, nose and throat specialists because of a right-sided hemicrania, right-sided tinnitus, nausea, vomiting and many other gastrointestinal complaints, was finally referred for psychiatric treatment because no medical diagnosis could be made and because the patient's complaining and whining seemed to indicate a neurotic problem. The neurotic problem was definitely present but some months later a slowly growing malignant tumor of Rathke's pouch was also found. Radiation therapy gave the patient sufficient relief so that the grosser aspects of his neurotic behavior disappeared, though of course, he remained essentially a neurotic individual.

Again, in hospital practice, postoperative toxic confusional states may create some impa-

tience with a patient who may require nothing more than a change in sedatives or a careful check of his fluid or caloric intake, or his urinary output to determine the necessary procedures for amelioration.

It is well to state here that in cases of elective surgery, whenever the element of the patient's manifest anxiety is extreme, great caution should be exercised in the preparation of the patient. In certain cases the operation may need to be given up. It seems clear that panic may contribute seriously to shock. Extreme panic may be connected with a strong wish to die to which, on the other hand, the individual is reacting with fear. Likewise, if there are excessive postoperative reactions not to be accounted for by explicit organic findings it would be well to suspect some psychological disturbance as in the case of postpartum psychoses. Psychiatric intervention at this time may in some instances prevent a really serious breakdown. Of course, one cannot wait till delusions, hallucinations and excitement have appeared before help is obtained. In many instances, if the attending physician himself would take the trouble to hold some reassuring discussions with the patient as to what is on his mind, this might be all that is necessary.

One of the things which we have learned in child psychiatry particularly is that in the instance of children's problems, not only the given child but his whole milieu are problems for the physician. From this point of view it is not too much to say that the pediatrician who is called in to care for a new born infant might be conceived to have a responsibility also towards the next older siblings. Recurrence of soiling and wetting, speech difficulties to the extent of full loss of speech, feeding problems and general disturbances of behavior and even organic-seeming illness such as cryptic fevers, may be reactions to the disturbance in the emotional economy of the child's life produced by the birth of a new baby. Other major changes in the life situation such as the death of a parent or sibling, upheavals in the family as the result of marital problems, moving to a new locality, etc., all these will have their repercussions in the feelings of the young child and disturbances may manifest themselves in one or several of the symptom pictures mentioned. Sometimes behavior which is otherwise typical of the postencephalitic child or of the true choreas may be manifestations of reactions to such major life experiences as have been mentioned. The life situation of the child particularly must not be overlooked when considering active intervention of a surgical nature. A child who is struggling with its resentful feelings about the birth of a rival should not be subjected at the same time to a tonsillectomy or circumcision which are subjectively felt as punishments. Any kind of a medical experience is potentially a traumatic event in the life of a child and to the extent to which it is controllable, as for instance in elective surgery, such an experience should not overlap such spontaneously occurring traumatic events as are seen in the life situation. It is not too much to state that it is never desirable to bring a child to the hospital for operation under false pretenses. Particularly, such a practice as performing a circumcision, for which the patient has not been prepared in advance, simply because the child is still anesthetic after a tonsillectomy, should be avoided. It is indeed questionable if circumcision, unless obligatory for serious organic reasons, should be performed on a child beyond the early infancy period. In general, the child should be prepared psychologically for medical or surgical intervention even more carefully than the adult because the repercussions in later life are likely to be more far reaching. Finally, the pediatrician cannot afford to forget that mother love is not the universal quality that we sentimentally believe it is, and that many children's ailments must be scrutinized in terms of disturbed maternal attitudes.

Now a few remarks about psychiatric principles in relation to the art of practice in general. Probably the most important thing psychiatry has learned is that there are many therapeutic virtues in the mere talking through of a problem. With the emphasis on technical and laboratory matters that modern medicine is characterized by, the human individual is too often looked upon as having no more prerogatives than the experimental animal. Even in those cases in which the presenting symptoms are entirely organic in nature we see in addition worry, concern or anxiety about the illness. No person who is ill can assume the same objective attitude towards his illness as the physician who is studying him and he requires more than just competent medical or surgical treatment. In fact, many doctors have made or spoiled their careers depending on how they have treated the patient as a human being.

The most successful are those who deliberately or intuitively treat the normal emotional problems associated with the organic picture.

It is not uncommon in hospital practice for the staff to gather about the patient's bed, learnedly discuss the findings, diagnosis and prognosis and leave the bedside and the patient without troubling to deal with the perplexity and anxiety which has arisen as a result of the discussion. As one patient commented, "They talked all about me but they didn't tell me." The mere telling him was enough to make a considerable difference in his outlook. In a similar connection a convalescent patient may often present a picture of excessive debility and apprehension which may interfere with his convalescence because of worry and preoccupation with real life problems which will need to be dealt with on leaving the hospital. It is not too much to say that good medical practice needs to deal with this as a medical complication.

The old family doctor who knew his patient from birth onward, intuitively and naturally dealt with such problems without the corroboration of modern psychiatry to justify him. The patient who selects his own doctor more often than not knows nothing of the physician's skill but nearly always he comes to him with a deep, if concealed, trust, dependence and hope which in technical psychiatric terms is referred to as the transference. This aspect of the physician's relationship to the patient is of extreme importance and is responsible for many of the "cures" which physicians effect under conditions which they themselves do not presume to be the outcome of their technical competence. Very often we categorize these recoveries as due to "nature" or "resistance" or to "attenuated virulence of the infection." The experience of the psychiatrist would tend to indicate that even if these factors are operating there is an accessory factor which is of tremendous importance—that is the factor referred to as transference. We cannot tell in how many instances this may be the most important factor even in organic disease. We therefore cannot afford to jeopardize its helpfulness by neglecting the implications of our human relationship with the patient and of those human problems in his life which cannot be surveyed under a microscope but must be dealt with by way of simple human understanding.

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THE OPERATIVE TREATMENT OF FRACTURES

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The operative aspect of the treatment of fractures is but a small part of the treatment in general. The great majority of fractures can be satisfactorily cared for by the closed methods, particularly the more common fractures with which we are all familiar, which are caused by indirect violence.

There are certain groups of fractures, however, in which good results cannot be obtained by closed reduction. There are two reasons for this, 1. either a displaced fragment cannot be controlled and brought into a position where healing can take place, or 2. even if healing does take place, a good functional result cannot be obtained. In the first group we have such fractures as those through the surgical neck of the humerus, with a dislocation of the head, and those through the neck of the radius with dislocation or fragmentation of its head with an associated tearing of the orbicular ligament. In the second group we have those fractures involving the patella and the olecranon with wide separation, and depressed fractures of the lateral tibial plateau.

Since these are perhaps the most common of the fractures usually demanding operative attention, let us consider the basis for this method of treatment and the principles underlying its application to each of these instances.

Read before Section on Surgery of Illinois State Medical Society, May 2, 1939, Rockford.

Fracture Dislocation of the Shoulder: When the arm is violently abducted, as by a fall with the force of the body behind it, the neck of the humerus near the greater tuberosity impinges against the acromion process. This point then becomes a fulcrum with the long power arm of the lever reaching from there to the hand and the short arm made up of the head alone. The head is first forced out of the joint through a rent usually in the anterior inferior portion of the capsule. As the force is continued, the surgical neck is fractured. Then, in most instances, the patient, realizing he has been hurt, will at the expense of great pain, bring the arm down to the side, and it is this adduction of the long distal fragment which completely separates the fractures and dissociates the head from the shaft. The head then lies in the soft parts of the axilla, completely inaccessible as far as any traction or manipulation of the arm is concerned. Less severe modifications of such a situation may, of course, exist, and remaining connections of muscle, tendon or capsule may permit of a successful maneuver, but such instances are as rare as they are fortunate. The muscles attached to the greater and lesser tuberosities, which are a part of the head fragment, have their origin on the scapula, and are much more effective in their tendency to keep the head displaced than any remaining flimsy tissue connected with the shaft. Frequently, also, (and not shown clearly in all x-rays) the head fragment is comminuted, either by avulsion of the greater tuberosity or in less definite ways which further makes the head a loose foreign body in the axilla. It is obvious, then, that open reduction alone can realign these fragments, and if this is not done, and the head remains displaced, not only will the shoulder itself be disabled, but irreparable damage will be done to the arm, forearm and hand by the continued pressure of the head on lymphatics, blood vessels and nerves.

Thus open reduction, done within a few days after the injury, need not be difficult but done later, after organization and fibrosis have taken place, it will be not only difficult, but perhaps impossible. An adequate incision is made parallel with and over the long tendon of the biceps. The deltoid fibres are separated, and the joint entered. The head is replaced through the tear in the capsule by lifting with the fingers, if this is possible, and if impossible, the head may be levered into position with a smooth surfaced instrument, care being taken not to injure the nerves and vessels lying under it. Fixation by any of the usual methods will suffice, and the position of 60 degrees of abduction, with slight flexion, is the one of choice. It is well to remember, however, that the material used for the internal fixation of these fragments should be strong enough to allow at least passive motion before bony union is complete.

Fractures of the Head of the Radius: The head of the radius may be fractured by direct violence against the dorso-lateral aspect of the upper forearm or by indirect violence against the heel of the hand, in which instance the force is carried up the radial shaft and impinges the head against the capitellum of the humerus. The radial head depends for its smooth rotatory action on the orbicular ligament, which is a modified part of the lateral ligament of the elbow. It is a tough, fibrous band, and its articular surface is as smooth as hyaline cartilage. When the radial head is displaced by a fracture through the radial neck or when the head is badly comminuted against the lower end of the humerus, the orbicular ligament must necessarily be torn. Its heavy consistency and bulk then cause it to occupy at least some of the space formerly occupied by the radial head. It is this factor which makes the replacement of the head very difficult, and even when this is successfully accomplished the resultant fibrosis associated with the healing of the ligament will be responsible for considerable limitation of pronation and supination of the forearm. It is obvious that in instances where the head has been badly comminuted there can be no control over the fragments. They will heal together in the displaced position, and the result will be a bony mass which does not resemble a normal head in either size or contour, and cannot possibly duplicate its function.

It becomes apparent, then, that when such a situation exists all the radial fragments down to the bicipital tubercle, and including the orbicular ligament, must be removed. No immobilization is necessary after such an operation, and early motion is desirable. This motion will aid nature's effort to cover the denuded upper end of the radius with a heavy fibrous tissue which in time will become fibro-cartilaginous. The operative field in these instances is readily accessible through a small incision on the postero-lateral aspect of the elbow joint. The incision

is posterior to the radial nerve, which is the only important structure which might be encountered.

The Patella: The patella is but one part of the extensor mechanism of the knee and, fortunately, its presence makes it possible for us to visualize by x-ray at least this part of the extensor muscle attachments. It is by no means the most important of these parts but is placed there merely to aid in the anchoring of the quadriceps expansion and the patellar tendon, and to provide for a smooth working surface when extension power is applied to straighten the flexed knee. When pulled apart by violent muscular contraction, or when fractured by direct violence, the visible separation of the patellar fragments represents with a fair degree of accuracy the amount of separation of the extensor aponeurosis as a whole. It does not represent by any means the only damage to the knee joint. We are all familiar with the fact that the entire patella can be excised and allow a functioning knee to remain or that one or more fragments of a comminuted fracture are frequently removed with satisfactory results. The step that makes such seemingly radical surgery possible, however, is the adequate approximation of the fibrous aponeurosis and sufficient immobilization for solid healing. It is this structure, of which the patella is but a part, that is important, so regardless of the incision used, regardless of the method used to keep the fragments in contact, whether drilled or encircled with wire, heavy silk, fascia, or what not, these remaining soft parts on the anterior surface of the knee must be repaired and protected if the operation is to be complete. If wire or heavy silk is used, motion may be started when the operative reaction has subsided because such firm materials will keep the patellar fragments together and in so doing will take any strain off the suture line of the ligaments. If lighter materials are used, the knee must be kept in extension until at least some bony union has taken place.

The Olecranon: In the anatomical and surgical considerations of the olecranon it is similar to the patella in many ways. They are both important extension units and the quadriceps tendon and the triceps tendon are alike in that they are very strong and will in most instances tear the bone to which they are attached rather than allow the force to tear them. The humeroulnar joint is not nearly as complex as the knee and because of the pure hinge action of this joint, there is no need for the development of a sesamoid bone within the fibers of the triceps tendon. Separation of the fragments in a fracture of the olecranon will, as in the case of the patella, weaken extension power if allowed to heal in such position. However, if only moderate separation exists, it will be more likely to bridge with callus than a similar situation in the patella, because the olecranon is not a sesamoid bone, and has a periosteal covering. If great separation is allowed to remain, the sharp angle of the shaft from which the olecranon has been torn will cause a roughening of the articular cartilage of the humeral trochlea. This will undoubtedly produce a disability. In such an injury the accurate replacement of the bony fragments, and their healing, is important. The fibrous expansion of the triceps tendon, unlike the quadriceps, plays a decidedly minor role in the extension mechanism of the elbow.

The Lateral Tibial Plateau: This common injury is caused by direct violence against the lateral surface of the knee, or by indirect violence against the lateral surface of the thigh higher up, with the foot and leg fixed. This throws the knee into a forced valgus position. If, under these conditions the internal collateral ligament of the knee holds, the lateral femoral condyle will crush the lateral tibial plateau. If the ligament gives way, and the violence is continued, any degree of medial dislocation may take place, depending on its force and duration. If the ligament holds, and the plateau is depressed, it will occur in one of two ways, 1. the entire fragment may be depressed intact, or 2. the fragment will be comminuted, crushed, and impacted in this depressed condition, with the destruction of many bone cells.

If the displacement is appreciable, no manipulation will succeed in reducing it and the clamps and redresseurs advocated for such conditions will usually fail. This failure is due for the most part to a lack of purchase area, the position of the upper end of the fibula contributing to this. Thus, this is another instance in which primary open reduction is indicated.

The incision should be long enough to give access to the lateral aspect of the knee. It is made on the lateral surface of the joint, in front of the head of the fibula, and avoiding the superficial peroneal nerve which leaves the parent

trunk near this point. If the fracture is made up of a single depressed fragment, its elevation and fixation with a long screw may be comparatively simple. If, however, the fracture is crushed and impacted, it may have to be elevated more or less piecemeal and the resultant defect filled in with pieces of cortical bone taken from the tibial crest near by. The rather long period of immobilization added to the insult of the injury and operation frequently results in permanent limitation of motion.

The fractures briefly discussed here are among those which are caused for the most part by standard forms of indirect violence, thus resulting in rather typical and familiar displacements. For this reason they are many times simple when compared to the atypical and perhaps unique displacements which are seen in direct violence injuries, and which may necessitate open reduction because of failure of closed methods, nerve injuries, interposition of soft parts, or the like. It is to be noted that each of the aforementioned fractures, however common it may be, is one which invades the surface of an important joint. The actual surgical repair is not the outstanding feature of what constitutes good treatment in these instances. It is to be remembered that an open operation in the case of any fracture which enters a joint means surgery in the joint, and if wound infection ensues joint infection almost invariably follows, with danger to life and limb, prolonged convalescence and uncertain outcome. Repair, beautifully done, at an ill advised time, may produce dire results.

In all fracture treatment the method of choice should be adapted to the particular type of fracture at hand, and operative methods are no exception to this rule. I have been for many years strongly opposed to the use of steel plates in the retention of fractures. My feeling has been partly due to having seen in the early days of my practice a series of very disastrous results from the use of plates in the hands of men who had much enthusiasm and little equipment to do bone surgery. The application of a steel plate to bone takes less equipment than any other retention apparatus, except possibly wire. A drill and screw driver are considered sufficient. Then, too, the quality of the material from which plates were made was not standardized. Some of them were brittle and broke under strain. Some of them were soft and bent under strain. and in either case deformity occurred. The screw being rather short and of the wood screw type, only one side of the cortex of the bone was engaged, and consequently a firm grip on the bone could not be obtained and maintained. The plates were often put on fractures where a plate was not applicable; in other words, where the fracture was near enough to one end of a bone so that one end of the plate was applied to cortical bone and the other mostly to cancellous bone, as a consequence of which the results were disastrous.

Furthermore, the asceptic technic often was insufficient to prevent infection. Osteomyelitis was frequent. The patient, instead of receiving benefit from an operation, was sometimes rendered crippled for life because of the operation. Of course, these things can all be avoided. Plates can be obtained now which are thin, and pliable enough to be plated to fit uniformly the contour of the bone. The drills are made to cut just enough bone out to allow a machine thread screw, and the screws are made in different lengths to conform to different diameters of bone, so that the threads will cut snugly into the bone from the outside of one cortex to the outside of the opposite one, thereby getting a firm, even grip. The plates must be selected so that the fracture is supported equally on both sides by insertion of the screws through solid bone, not through cancellous bone on one side of the fracture and cortical bone on the other.

Fractures of the bones of the forearm are famous for being difficult to bring into position and retain in position, because of the angulation of muscle pull and its relation to the long axis of the bone. This is always true, and any fixation apparatus, internal or external, may not hold; therefore, constant traction and countertraction which may be applied to the surface of the skin or by way of wire through the bone, is sometimes necessary. I believe if careful consideration is given to each fracture, to the anatomy and physiology of the structures surrounding that fracture, to the aseptic technic necessary in the operation, as well as to the mechanics of open operation, much better results will be the rule in the future. Careful cleansing of the skin, careful draping of the field of operation, protection of wound edges, scrupulous attention to aseptic precautions with respect to assistants and nurses, as well as fixation materials and

instruments, will obviate many of the catastrophes we have seen in the past.

Fractures of the Neck of the Femur: Within the last two years these fractures have come to be considered always operative by a considerable number of surgeons, and this feeling is spreading to the medical profession as a whole. There have been many reports written as to the simplicity of procedure and the perfect results obtained by internal fixation of the fractured hip. Like many comparatively new things in medicine, the pendulum is swinging strongly in this direction, and it will be only by the accumulation of statistics that we can tell what the percentage of risk is under various forms of treatment in various types of cases.

Treatment of this fracture is also an individual problem. The age of the patient, his physical condition, the difficulties of operative procedure on that particular patient, must all be considered. Operation on a fat woman of 70 is a very different matter than on a thin woman of 55, in comparable health. Also, the ability to retain the fragments in position differs according to the location and angle of the fracture.

This fracture has been spoken of as fracture of the neck of the femur, without any qualification. A subcapital fracture, with the head in valgus position, practically never needs to be considered an operative case, whereas a midcervical fracture that has a line which more or less parallels the weight-bearing line of the shaft of the femur is extremely difficult to reduce and hold in reduction. These fractures occur at all angles, and the difficulties vary accordingly.

It is the concensus of opinion among men who have so far done most of this work, that 100 per cent. reduction has a definite bearing on ultimate union. X-rays are often carelessly taken. The lower fragment is allowed to lie on the table in complete external rotation, and the x-ray is made where the fractured surface of the lower fragment points almost directly toward the tube in the anteroposterior position. This does not give an adequate idea of the line of fracture and, as in the shoulder, one should have a profile view to gauge the line of fracture. In the shoulder, external rotation is necessary to throw the greater tuberosity into profile view in the anteroposterior x-ray. In fracture of the hip, internal rotation of the leg is necessary. It is also necessary to get good lateral views in an obese patient, which is frequently difficult unless all the equipment to do so is at hand—which it seldom is. Therefore, until much more study has been given the problem by men who have all the equipment and skill necessary to deal with the exigencies of a given case, treatment of fracture of the neck of the femur must be considered a major problem. I believe it can be stated at this time, however, that if the fracture at hand is properly analyzed, and if the fragments are fixed by internal fixation, properly and skillfully, the results in general are better by this method. It must not be considered an easy or simple method, or without risk, however, and all requisite equipment should be at hand before it is decided to so treat the fracture.

This is more or less a rambling discussion, but when one is asked to discuss the operative treatment of fractures in forty minutes, after having tried it for thirty years, it can scarcely be other than a rambling discussion, because the specific case or group of cases cannot be identified. To cover the field would be a matter of forty days' discussion, and even then it would not be finished so far as an individual case is concerned.

DISCUSSION

Dr. James Jackson, Madison, Wisconsin: I know of no surgeon in the country today who is better qualified by training and by the seriousness with which he approaches his work than Paul Magnuson. I have admired him for many years and have never heard him speak without learning something, and I think everybody else does. He really understands fractures, and it is rather an anticlimax to have a man who has had no more experience than myself, try to speak after Paul.

There is one thing I am sorry about—his condemnation of the Lane plate. When Lane came to America and operated in Murphy's Clinic, I was there, too, but fortunately for me I did not live in Chicago, and after seeing his work I went home still thinking it was a most wonderful thing. I went ahead with the work and for many years have been using plates on fractured bones. Certainly if I had had the terrible results Paul speaks of, I would have quit it years ago, but I have had excellent results as many of you know. Lane was all alone, he did not have his own assistants or nurses but had to operate with those to help him who were utterly unacquainted with his no touch technique. Is it any wonder that the results were less than expected, that infection occurred and many cases ended in disaster and everybody said it was terrible? If Paul had not seen so many bad results I believe he would have plated a lot of femurs and tibias, and I am sure he would have been just as proud of the results he would

have achieved in this manner as he is of the fine work he has accomplished by other means.

Fracture dislocation of the head of the humerus should be treated by open operative methods in most instances; of this there can be no question. I recently had a case in a young woman that was complicated by severe diabetes. While in insulin shocks she had fallen and received this injury. The articular surface of the head was split longitudinally. We tried to do a closed reduction but only succeeded in dislodging the head further posteriorly. I do not believe the head could have survived if it had been reduced after being dislodged so completely. I had previously performed an arthroplasty on her opposite shoulder for ankylosis which was also the result of a fall while in insulin shock. My associate, Dr. Gallagher, recalled that while on service with Dr. William Darrach and Dr. Clay Ray Murray of New York, they had endeavored to remove a posteriorly dislocated head by the anterior route and it proved to be a very difficult procedure. After working for some two hours they turned the patient over and with a posterior incision removed the head quite easily. I was familiar with the Kocher posterior incision to approach the joint but this is a procedure of considerable magnitude involving the severance of the acromion process and dislodging several of the muscles of the scapula. By making a moderately-sized hockey stick incision posteriorly, spreading the posterior portion of the deltoid and elevating the infraspinatus muscle and opening the capsule, I succeeded in removing the head very easily. The end result was all that could be expected and gave her considerable motion in the joint. This shows the importance of making a careful study beforehand, and making your approach in the simplest manner possible in these cases.

Preoperative preparation of the field is a very important part of the technique and should not be left entirely to interns and nurses. I believe a two days preparation is none too much. I never take my eyes off the patient from the time the preparation starts in the anesthetic room until he is fully draped on the operating table. I do not want infection and by observing a careful technique I do not get it. The proper technique is not difficult for a good general surgeon to acquire but does need careful study, trained assistants, adequate armentarium, and observance of all the rules. This type of work should not be done as an emergency nor by men who by lack of training or experience are unsuited to do it. For example, I was recently called on the telephone by a country doctor who said he had a femur to plate in the morning and asked me over the telephone how to do it. I answered him by saying that I had been studying this problem for over twenty-five years and I did not believe that I could give him the results of this experience in a two minute conversation over the telephone. There has resulted in the past and will be in the future, many instances of catastrophe in the open treatment of fractures so long as doctors will attempt this type of work who know nothing of the technique and who have the foolhardiness to attempt this work where many good surgeons fear to tread. Dr. Cubbins, who in the past has been one of my most severe critics, said to me on the side one day, "It is all right for you to do it, Jimmy, but I haven't your mechanical dexterity and do not know how to put on plates and screws." Dr. Cubbins can and does do this work and has performed the open operation in many instances as narrated in his article on "One Hundred Cases of Bumper Fractures," published some time ago in *Surgery, Gynecology, and Obstetrics*, in which he reports openly elevating and nailing the displaced portion of the upper end of the tibia in fifty per cent. of such cases.

By the operative treatment of fractures we are enabled to start early motion and exercises of muscles, one of the most important elements in the preservation of function and restoration of the structures to normal. I have my patients do what I call static exercises, i. e., alternate contraction and relaxation of the muscles without flexion of the joints. This I have them do for a definite number of minutes each hour during the day and it is quite surprising to see how little atrophy results when the method is carried out. Dr. Magnuson does not use a cast over the knee joint when he has openly reduced a fracture of the patella. This is excellent and I fully believe in it. I do use a posterior splint for four or five days or compression bandage over rubber pads which obviates the accumulation of synovial fluid or hemarthrosis in the joint. Again I agree that an important part of this operation is the suture of the torn lateral ligaments. This is important for close approximation of the bony fragments is absolutely necessary if we are to obtain bony union and avoid fibrous union and thus avoid refracture at a later date. I have used phosphorbronze wire, stove wire, chromic catgut, and kangaroo tendon. Recently I have been using No. 21 gage Babcock rustless steel wire. It is beautiful to handle and by twisting the ends of the wire you can achieve a perfect approximation but there is a tendency for it to break as instanced in two of our cases. This wire must be stronger than it is if we are to continue to use it. When the lower fragment is comminuted and broken into many pieces by striking the dashboard of an automobile, it is much better to completely remove these fragments and suture the upper fragment to the infrapatellar ligament. In the delayed union cases it is often necessary to lengthen the quadraceps tendon by the Bennett method and lateral incisions at the upper border of the patella as mentioned by Key. This gives a much stronger union than fibrous tissue between the fragments. I am as yet unwilling to remove the patella completely except in the rarest cases, as I believe the large upper fragment does protect the articular end of the femur when the knee joint is flexed. This, it seems to me, is the main function of the patella and it should be preserved if possible.

Fracture of both bones of the forearm is to most of us one of the most difficult fractures in which to achieve a good result. We consider these cases, except in children, as operative, and thereby often avoid synostosis with its complete loss of supination and pronation in the forearm.

In fracture of the neck of the femur no one as yet knows quite where we stand but certainly by the method of nailing or pinning this fracture, we are enabling these elderly debilitated persons to get out of bed without pain at a very much earlier date than by the Whitman method, and this in itself, no matter what the end results may finally be, makes the procedure justifiable. There is much discussion today as to whether the hip joint should be opened in the reduction and fixation of this fracture or whether the fracture should be fixed by the so-called blind method. Certainly if the fracture cannot be reduced by manipulation the joint must be opened, but for the average surgeon to open the joint and treat the fracture is quite an ordeal and does result in shock to these elderly people, despite the fact that Dr. Magnuson says no shock results. I do not believe from my own experience and that of others that interposition of soft tissue between the fragments occurs in about one out of five instances of this fracture as cited by Cubbins and Callahan. At our Clinic we have developed a clamp somewhat similar to a Lane clamp which we apply to the base of the neck of the femur and drill in a Steinman pin. The clamp is then removed and a cannulized Smith-Petersen nail is driven into the head and the fracture impacted. This work is done entirely under fluoroscopic control and is much more rapid than the plate method. We get the lateral view under the fluoroscope with the hip flexed at 90° and in internal rotation with slight abduction. I use a motor drill with which to insert the Steinman pin. By rheostat control we cut down the rapidity of the drilling and inasmuch as we are going through cancellous bone, I do not believe there is any burning of the bone. By first fixing the head of the femur by a Steinman pin, we avoid rotation of the head should the nail not strike squarely in the center. Early weight-bearing is at present a very much disputed question. Smith-Petersen has come to the conclusion that it should be avoided for at least three or four months. Often men of large experience, such as Thornton, believe the cases do better with early weight-bearing rather than late. Experience during the next few years should settle this question. In some selected cases of elderly slight frame subjects, full weight-bearing is encouraged in a matter of six or eight weeks but possibly time will show that this is too early.

I wish to apologize for the length and more or less chaotic nature of my discussion. Only a few minutes ago I was unexpectedly asked to discuss Dr. Magnuson's paper and I wish to thank you for your forbearance in listening to it so attentively.

Dr. Paul B. Magnuson, Chicago: I want to correct some wrong impressions which I apparently gave you. I have no criticism of the technic of Lane. What we saw was the result of Lane salesmanship. Dr. Jackson went home and carried out correctly the technic, but there were a lot of people who tried it because it was easy and all that was needed was a screw driver and a plate, and for a time it seemed that they operated on anyone who would stand still. Consequently we saw a lot of infections. I think the so-called Lane plate has never been standardized. Many are brittle, or bend, and the screws were placed through one side of the cortex only, and were put through cancellous bone where they could not possibly hold.

I am not condemning steel plates. As a matter of fact, Darrach has a real plate, and we have used these. They are really tough. They have screws of various lengths which go through the bone to the cortex on the other side and really get a grip. They permit early motion, thus avoiding the terrific atrophy that Dr. Jackson spoke of. I certainly do not condemn the use of plates, put in in the right way and on the right patient, but the promiscuous use of plates in the wrong way in open reduction of fractures I do condemn.

Of course I bring the bones together in the patella. It will not spring apart if the quadriceps is fastened to the tendon. The small pieces should be taken out, but the patella must be brought fracture-line to fracture-line.

I do not agree with Dr. Jackson at all on the question of shock in hip cases. What difference is there between an incision over the trochanter long enough to see through or a hockey stick incision a little anterior that you can see through? I have never seen any shock, and I have done a number of operations, the oldest patient being 83 and the youngest 37. Dr. Jackson says the spicules of bone would not make any difference if you impacted them. That is all right, but how do you know which way they are pointing? If they are pointing the wrong way the head pivots on them, and I have seen that happen.

Dr. Frederick Christopher, Evanston: I have enjoyed this afternoon very much, and profited by the discussions. There is one contribution I would like to make because of the remarks about impaction. About a year ago I was attracted by an article by George Apfelbach about walking on impacted fractures. We have considered an impacted fracture one that looked like an impacted fracture in the x-ray. I know there have been some errors, because we did not take lateral views. If the patient is lifted off the bed and put in a short spica above the knee and around the pelvis, in wide abduction, and then the good leg is elevated, with the spica on the injured side, the patients can be on crutches in two or three days, and walk with a cane in ten days. We have had nine or ten cases last year. It is too soon to report, but everyone has walked and in the follow-ups there has been no shift of position. Dr. Brackett told me he would not publish any articles on the hip until two years had elapsed, but so far the results are so encouraging that I feel justified in commending that method. We know that if they walk on it it will unite.

I would like to make a plea for opening transverse fracture of the femur and reducing it, and not fixing it, particularly in a child. I have seen profound shock result from an attempt at reduction, and in a cast they get a beautiful result. I also want to make a point in some fractures of the olecranon, where the triceps tendon goes beyond the fracture. If in an elderly person and there is the slightest power of extension of the arm, I do not think you need to operate.

This is early to mention, but we have two cases and some of my friends have more, done by Brooks' treatment of fracture of the patella. I am convinced it is proper for all compound fractures of the patella, and am beginning to think it is proper for all fractures of the patella. In 1937 he published an article pointing out the rationale of treatment of fractures of the patella. He found that the kangaroo had hardly any patella, the elephant had a very large one, and that the smaller and more active the animal the smaller the patella. He opened the knee and took out the patella and sewed the periosteum around the patella together. He got to making experiments on the cadaver and showed a large number of cases. Dr. Jennings, at my suggestion, operated on a boy who was brought in with the fracture streaked and dirty. It was cleansed with copious irrigations, and he took out every fragment of patella, closed it, and that boy has been playing basketball. He has great strength in the quadriceps. I have since done it on a simple transverse fracture of the patella. I confess the difficulty lies in approximating the thin periosteum, but the return of function is very rapid. Perhaps, since bony union rarely occurs, we can take the patella out and throw it away.

MASSIVE HEMORRHAGE FROM AN EPISIOTOMY

CHARLES FINKELSTEIN, B.S., M.D.
From the Obstetrical Service of the Cook County Hospital
CHICAGO

Massive hemorrhage from an episiotomy is rare, especially when the hemorrhage endangers the life of the parturient. A case is reported in which an episiotomy was performed preparatory to a forceps delivery. This was followed by a severe hemorrhage from both sides of the wound which necessitated an immediate blood transfusion.

CASE REPORT

Mrs. M. D., aged 25, primipara whose prenatal course was uneventful, entered the Cook County Hospital February 9, 1934, at midnight, stating that labor began on February 8th, at 9:00 P. M.

Examination at 12:45 A. M., uterine contractions of moderate degree every ten minutes. Rectal examination disclosed cervical dilatation of two cm. and partial effacement. The bag of waters was intact. The fetal heart tones were 140 and good quality. Diagnosis was made of O. R. T.

At 8:30 P. M., vaginal examination revealed the bag of waters ruptured, cervical dilatation five cm. and the presenting part at the ischial spines. Fetal heart tones were 140 and uterine contractions were every five minutes. The parturient's condition was good. Morphine sulphate gr. ¼ and scopolamine gr. 1/150 were given.

On February 10, at 8:30 A. M., the cervical dilatation was six to seven cm. and the presenting part was just below the ischial spines. The fetal heart tones were 140 and good quality.

At 6:30 P. M., cervical dilatation was complete. The presenting part was on the perineum. Uterine contractions were every two minutes and there was no progress of the fetal head.

At 8:00 P. M., the station of the presenting part was unchanged. The diagnosis was O.R.T., and the fetal heart tones were 140 and good quality. Owing to the prolonged first stage, and nearly two hours of the second stage with no progress, it was decided to perform a forceps delivery.

Patient was prepared for delivery. A left mediolateral episiotomy was performed which was immediately followed by a profuse hemorrhage from both edges of the wound. The bleeding was so massive that it was necessary to control it immediately by continuous mattress sutures of the edges of the vaginal walls. By this time the parturient showed marked evidence of secondary hemorrhage. The temperature was 100 degrees F., respiration 36, and the pulse was imperceptible.

Forceps were applied, but traction failed to bring about descent of the fetal head. The forceps was removed and intrauterine examination was made which presented a constriction ring about the fetal neck and about eight cc. above the external os. Adrenalin M. 10 was given, but the constriction ring failed to relax. On account of the poor condition of the parturient due to the severe hemorrhage, delivery was postponed and treatment instituted for the state of hemorrhage. External heat was applied, intravenous glucose and a blood transfusion of 500 cc., of whole blood was given by the direct method. The parturient reacted.

At 11:20 P. M., the parturient was in fairly good condition and she was again prepared for delivery. The fetal heart tones at this time were not audible. An intrauterine examination was made and the ring was found around the fetal neck. Adrenalin M. 10, and M. 10 repeated in ten minutes, was given with the fingers held against the ring. The ring began to relax, so forceps were applied and by continuous traction the head was delivered. A Braun book was applied to the anterior axilla and a stillbirth delivered at 11:45 P. M. The placenta was removed manually with moderate bleeding. The episiotomy was repaired with deep silk worm sutures.

The patient was returned to bed and external heat applied. Pituitrin ampoule 1 was given and subcutaneous fluids were started. Digitos and caffeine sodium benzoate were given every four hours in alternating doses.

After a stormy convalescence the patient recovered. The episiotomy wound became infected but responded well to local treatment.

DIAGNOSIS

Massive hemorrhage from an episiotomy complicated by a constriction ring dystocia.

The rarity of this type of hemorrhage following an episiotomy leads me to speculate as fol-

lows: The blood supply of the upper part of the vagina is derived from the vaginal branches of the uterine arteries and hypogastric arteries. The lower part of the vagina is supplied from the pudendal arteries.

In this instance, I believe that the hemorrhage being so severe was due to an anomalous blood supply of the vagina in which the vaginal branches of the uterine and hypogastric arteries passed downward to the mucocutaneous junction of the vagina. That would account for the hemorrhage being constant from both the lateral and mesial incised vaginal walls. In a pudendal arterial hemorrhage following an episiotomy, the hemorrhage is mainly from the lateral incised vaginal wall.

55 East Washington Street.

DAMAGED ENOUGH ALREADY

Lawyer (helping pedestrian up)—Come with me, my man. You can get damages.

Pedestrian (groggy)—H'vens man, I got all the damages I want. Get me some repairs.—*New Smyrna Breeze.*

Society Proceedings

November 1st—Lawrence County Medical Society, Lawrenceville. Hotel Lawrence. Dinner at 7:30 P. M. Dr. James H. Hutton will speak on "Classification and Management of the Hypotensive Case."

November 2nd—Hancock County Medical Society, Carthage. Carthage Hotel. Dinner at 6:30 P. M. Dr. J. R. Ballinger will speak on some Medico-Legal subject and Dr. Irving Dreyer of Chicago will speak on "Arthritis."

November 14—Effingham County Medical Society, Effingham. Benwood Hotel. Dinner at 6:30 P. M. Dr. George deTarnowsky will speak on "Breast Tumors."

November 14—McLean County Medical Society, Bloomington. Illinois Hotel. Dinner at 6:00 P. M. Dr. Paul S. Rhoads and Dr. Ford K. Hick will conduct a symposium on "Pneumonia."

November 15—Tri-County Medical Society, Vienna, Ill. Dinner. Dr. T. B. Williamson will speak on the State Maternal Welfare Program.

November 15—Coles-Cumberland County Medical Society. Charleston. Dinner at 7:00 P. M. Dr. Alfred J. Cone of St. Louis will speak on "Sinus Disease."

November 16—Bureau County Medical Society. Princeton. Dinner at 6:30 P. M. Dr. Italo F. Volini of Chicago will speak on "Diseases of the Heart."

November 17—Will-Grundy County Medical Society. Joliet. Louis Joliet Hotel. Luncheon 12:00 Noon. Dr. Willard VanHazel of Chicago will speak on "Empyema."

November 17—Dougas County Medical Society. Tuscola. Dinner at 6:30 P. M. C. L. Reed, Ph.D. will speak on "Vitamin Therapy."

November 21—Bureau County Medical Society. Perry Memorial Hospital, Princeton. Dinner at 6:30 P. M. Dr. B. M. Levin will speak on "Surgical Diseases of Childhood."

November 21—Lake County Medical Society. Libertyville. Elizabeth Condell Memorial Hospital, 8:00 P. M. Dr. W. C. Danforth will speak on "Medical Complications of Pregnancy."

November 24—Will-Grundy County Medical Society. Joliet. Louis Joliet Hotel. Luncheon 12:00 Noon. Dr. I. R. Sonenthal will speak on "What the General Practitioner Should Know About Psychiatry."

November 28—Iroquois County Medical Society. Watseka. Dinner. Dr. James T. Case will speak on "X-Ray Diagnosis of the Colon with Reference to Cancer and Its Differential Diagnosis."

November 28—Knox County Medical Society, Galesburg. Galesburg Club. Dinner at 6:30 P. M. Dr. James J. Callahan, will speak on "Fractures" and Dr. William J. Dieckmann will speak on "Sulfanilamide in Obstetrics and Gynecology."

November 28—Rock Island County Medical Society, Moline. Moline Public Hospital, 8:30 P. M. Dr. Louis W. Sauer will speak on "Prevention and Treatment of Enteritis in Infants."

November 30—DeKalb County Medical Society, DeKalb. Luncheon at Hospital at 12:00 Noon.

Dr. Lowell Bushnell—"Management of Puerperium and Complications."

Dr. Joseph Baer—"Prevention and Treatment of Abortion."

Dr. Sidney Levinsohn—"Scarlet Fever."

Dr. John Bigler—"Sulfanilamide."

Dr. Franklin Corper—"Genito-Urinary."

Dr. W. C. Danforth—"Medical Complications of Pregnancy."

December 4—Henry County Medical Society, Kewanee. Kewanee Public Hospital. Dinner at 6:00 P. M. Doctor will speak on "Indications, Contraindications and Technique of Forceps Delivery."

December 5—Lake County Medical Society, Highland Park. Highland Park Hospital, 8:00 P. M. Dr. Davis S. Hillis will speak on "Prevention and Treatment of Abortion."

December 5—Vermilion County Medical Society, Danville. Dinner at Hotel Wolford. Dr. Lindon Seed will speak on "Treatment of Exophthalmic Goiter."

December 7—Ford County Medical Society, Paxton. Hotel Middlecoff. Dinner at 6:30 P. M. Dr. Charles Newberger will speak on "Minimizing the Hazards of Childbirth."

December 11—Lake County Medical Society, Waukegan. St. Therese's Hospital. Luncheon 12:15 P. M. Dr. Craig Butler will speak on "Problems and Diseases of the Newly Born."

December 12—Effingham County Medical Society, Effingham. Benwood Hotel. Dinner at 6:30 P. M. Dr. W. H. Elghammer will speak on "Rational Infant Feeding."

December 12—McLean County Medical Society, Bloomington. Illinois Hotel. Dinner at 6:00 P. M. Dr. Robert S. Berghoff and Dr. Angelo Geraci will conduct a symposium on "Heart Disease."

December 14—Union County Medical Society, Anna, Ill. Dr. David A. Horner will speak on "Treatment of the Postdue Patient."

The Tri-County Medical Society of Southern Illinois (Pope, Johnson and Massac) had their annual meeting, for the election of officers October 18 at Metropolis, Ill. Dr. L. S. Barger, the past president, gave the President's address.

The following officers were elected for the ensuing year: Dr. E. A. Veach, Vienna, Ill., President; Dr. S. Ward, Golconda, Ill., Vice-President and Dr. V. M. Timm of Metropolis, Ill., for Secretary-Treasurer.

V. M. Timm, Metropolis, Ill.

CHICAGO MEDICAL SOCIETY

The next scientific meeting of Chicago Medical Society will be held Wednesday evening, November 15, at the Chicago Woman's Club, 72 East 11th Street, at 8:30 P. M.

Dr. Tom D. Spies of Cincinnati, Ohio, will be the guest speaker. Subject: "Vitamin B and Pellagra."

The clinical meeting preceding the meeting will be a Symposium on Nutritional Deficiency and will be held at Thorne Hall, Northwestern University Medical School. Program is as follows:

9:00 A. M. to 12:00 Noon. Chairman—N. S. Davis, III.

1. Vitamin A Deficiency—Frederic T. Jung.
2. Vitamin D and Calcium Deficiency—Smith Freeman.
3. Vitamin K Deficiency—Warren H. Cole.
4. Vitamin C Deficiency—Chester J. Farmer, Arthur F. Abt.
5. Pellagra and Polyneuritis in Alcohol Addicts—Don C. Sutton, John Ashworth.
6. Round Table Discussion—Tom D. Spies.

Luncheon—DeWitt Hotel, 50c.

2:00 P. M. to 5:00 P. M. Chairman—Chester J. Farmer.

1. Nutritional Deficiencies During Maturity and Old Age—N. S. Davis, III.
2. Nutritional Deficiencies During Pregnancy—Edward Allen.
3. Nutritional Deficiencies During Infancy and Childhood—Bengt Hamilton.
4. Anemia Due to Nutritional Deficiency—Howard L. Alt.
5. Nutritional Deficiencies and Their Relation to Surgery—Charles B. Puestow.
6. Normal Dietary Requirement—Clifford J. Barborka.
7. Commercial Vitamin Preparations—F. C. Bing.

Tri-County Medical Society

The eighteenth Annual Meeting of the Tri-County Medical Society was held in Kewanee, Thursday, October 19, 1939. The attendance of about one hundred were present from surrounding counties, two being present from Rushville having driven one hundred miles for this meeting. Peoria was well represented with between fifteen and twenty doctors. H. M. Camp, M.D., Secretary of the Illinois State Medical Society honored us by being present and made a few remarks after dinner in regard to the Wagner Bill and other economic matters.

The following All-Iowa Scientific Program was presented: 4:00 P.M. Y. M. C. A. Building.

"Malignancies of the Large Bowel and Rectum," Dr. F. B. Peterson, Professor of Surgery, State University of Iowa College of Medicine.

"X-Ray Treatment of Malignancies" (giving his own technique), Dr. H. D. Kerr, Professor Radiology, State University of Iowa College of Medicine.

6:00 P. M. Chicken Dinner—Hotel Parkside.

After-Dinner Speaker—"What Nonsense!" Dr. C. G. Farnum, Poet-Laureate of the Illinois State Medical Society, Peoria, Illinois.

"Value of Urological Findings in Diagnosis of Abdominal Tumors," Dr. N. G. Alcock, Professor of Genito-Urinary Diseases, State University of Iowa College of Medicine.

All of the papers were very interesting and instructive. The essayists certainly did full justice to their subjects and received the commendation of all present.

The 1940 meeting will be held in Monmouth, Illinois.

Marriages

ROBERT F. DEARBORN, Orangeville, Ill., to Miss Barbara Burritt of Rockford, September 2.

WILLIAM N. GILMAN, Wenona, Ill., to Miss Dorris Louise Lee of Normal in August.

OTIS H. LAW, Pontiac, Ill., to Miss Sue Field of Miami, Fla., May 14.

JOSEPH MARCOVITCH, Dwight, Ill., to Miss Lillian Ganzer at Brooklyn, September 6.

BERNARD B. NEUCHILLER, Woodstock, Ill., to Miss Doris Purcell of Equality in Chicago, September 2.

RALPH N. REDMOND, Sterling, Ill., to Miss Katherine Baxter of Cedar Rapids, Iowa, August 1.

CHARLES MCCAW WOOD to Miss Florence Swan, both of Maroa, Ill., at Rochester, Minn., August 15.

ORLAND MILLER SANDERS, Centralia, Ill., to Miss Ruth E. Murphy of Kirksville, Mo., September 25.

Personals

Dr. J. P. Greenhill, Chicago, presented a paper on "Endocrinology in Gynecology" before the Maimonides Medical Society in Detroit, October 24.

Dr. Edmund Jacobson will present a summary of progressive relaxation as a system of assisting bodily and mental recuperation from fatigue and avoidance of mental ills at Boston University on the evening of November 6. This is the 7th lecture of a survey course there entitled, "The Fundamentals of Health Education." On the afternoon of the same day he discussed some practical aspects of relaxation at the Bouvé-Boston School of Physical Education.

Dr. Alfred Ash has recently been appointed head physician at the Sailors' and Soldiers' Home at Quincy, Illinois. Following the death of Doctor C. E. Ehle, several months ago, Doctor Alfred S. Ash, a member of the staff, was promoted to head physician.

Dr. Vernon David addressed the Sangamon County Medical Society in Springfield, subject "Carcinoma of the Sigmoid and Rectum," on November 2.

Dr. M. H. Kronenberg gave a paper on "The General Practitioner's Approach to Industrial Hygiene" before the Winnebago County Medical Society at Rockford on November 3.

Drs. Robert S. Berghoff and Angelo S. Geraci held a heart clinic and presented papers on heart disease before the Madison County Medical Society on November 3.

Drs. Philip H. Kreuscher, James H. Hutton, Clifford Grulee, David H. Hillis, Charles Edwin Galloway, John S. Coulter, LeRoy H. Sloan, and Arrie Bamberger participates in the program of the Southern Illinois Medical Association annual meeting at Mt. Vernon, Illinois, on November 2.

Dr. Lowell D. Snorf addressed the La Salle County Medical Society at Starved Rock on October 26, subject "Functional Disorders of the Stomach and Intestines."

Dr. Italo F. Volini presented a paper on "Sulfapyridine Treatment of Pneumonia" before the Ogle County Medical Society on October 26.

Dr. Wayne W. Fox gave a paper on "Pneumonia" before the Ford County Medical Society on October 26 at Paxton.

Frank C. ValDez will give a talk on "Heart Disease Among Business Men" before the Hinsdale Chamber of Commerce on October 24.

Dr. Herman L. Kretschmer addressed Will-Grundy County Medical Society at a luncheon meeting in Joliet, October 27, giving a talk on "Diseases of the Prostate."

Dr. Samuel E. Munson, Councilor at Large, presented the subject of "Medical Economics" before the Girard Kiwanis Club, September 28.

Drs. Sidney and Bernard Portis presented a program on "The Newer Aspects in the Medical and Surgical Management of Gall Bladder and Liver Disease" before the Scott County Medical Society, Davenport, Iowa, on October 3.

Dr. William S. Sadler discussed "Psychiatry and Tuberculosis" at the annual meeting of the Michigan Tuberculosis Association at Lansing, Michigan, on October 6.

Dr. Carolyn N. MacDonald addressed the Shelby County Medical Society and the Shelby County Federation of Women's Clubs at Shelbyville and Windsor on October 24, subject "Prenatal Care."

Dr. Robert A. Black gave a talk on "Upper Respiratory Infection" before the physicians of Rock Island County in connection with their Maternal Welfare Committee activities on October 24.

Dr. N. S. Davis, III, was invited to talk on Socialized Medicine at a meeting of the Meharry Alumni of Chicago on October 24.

Dr. Ernest A. Pribram discussed "Management of Diabetes Based on Modern Conception of Carbohydrate Metabolism" before the German Medical Society of Chicago, October 3.

At a meeting of the Fulton County Medical Society in Canton October 12 Dr. Leroy H. Sloan, Chicago, discussed "Neurology for the General Practitioner."

The Kankakee County Medical Society was addressed October 12 by Dr. Howard A. Lindberg, Chicago, on the treatment of pneumonia.

Dr. Samuel J. Fogelson, Chicago, addressed the Effingham County Medical Society, Effingham, October 10, on "Treatment of Gastroduodenal Ulcerative Disease Based on Modern Physiology."

At a meeting of the Chicago Pediatric Society October 17 Drs. Arthur F. Abt and Heyworth N.

Sanford spoke on "Hemolytic Disease in Infants" and "Nuclear Icterus" respectively.

At a meeting of the Fulton County Medical Society in Canton September 21, Dr. Carlo S. Scuderi, Chicago, spoke on fractures.

Dr. Paul H. Wosika, Chicago, addressed the Will-Grundy County Medical Society in Joliet October 6 on "Auricular Fibrillation."

Dr. Frank Deneen, Bloomington, spoke before the Madison County Medical Society in Alton October 6 on "Medical Management of Gallbladder Disease."

At a meeting of the Sangamon County Medical Society in Springfield October 5, Dr. Irvine H. Page, Indianapolis, discussed hypertension.

At a meeting of the Peoria City Medical Society, September 19, Dr. Laurence H. Mayers, Chicago, spoke on "Differential Diagnosis of Acute Abdominal Pains."

The Illinois Association for the Crippled, Inc. will hold its third annual meeting at the Knickerbocker Hotel, October 10, under the presidency of Dr. Edward L. Compere.

Dr. Walter C. Alvarez, Rochester, Minn., addressed the Chicago Society of Allergy, October 16 on "Gastrointestinal Allergy" and Dr. Charles K. Maytum, Rochester, Minn., spoke on "Oxygen Therapy and X-Ray Therapy in Asthma."

The Chicago Gynecological Society was addressed October 20, among others, by Drs. Eustace L. Benjamin and William C. Danforth, Evanston, Ill., on "Bipartite Uterus" and Robert M. Grier and Herbert O. Lussky, Evanston, Ill., "Premature Infant Mortality."

At a meeting of the Chicago Pathologic Society October 9 the speakers were, among others, Dr. Samuel A. Levinson, who delivered the presidential address on "History and Progress of the Scientific Work of the Cook County Coroner's Office" and Dr. Edith L. Potter, "Disseminated Ganglioneuroblastoma in a Stillborn Fetus."

At a joint meeting of the Rock Island medical and dental societies, Rock Island, October 10, Dr. Frederick B. Moorehead, Chicago, discussed "Use of Elastic Traction in the Management of Jaw Fractures and in Plastic Surgery."

A symposium on medical economics was presented before the Champaign County Medical Society, October 12 by Drs. Edwin S. Hamilton, Kankakee; Harold M. Camp, Monmouth, and Calvin C. Applewhite, U. S. Public Health Service, Chicago.

Dr. Robert S. Berghoff, Chicago, discussed "Senile Ectasy—A Clinical Discussion of Vascular Changes" before the Cass County Medical Society, Rushville, September 20. The meeting was in honor of physicians of the county who have been in the practice of medicine for fifty years.

Dr. Harry Gideon Wells, professor and chairman of the department of pathology, University of Chicago, delivered the fourth Christian Fenger lecture of the institute and the Chicago Pathological Society on "A Neglected Subject, Adipose Tissue" at the Palmer House, November 13.

The Lee County Medical Society was addressed in Dixon, September 21 by Drs. Guy S. Van Alstyne and James J. Callahan, Chicago, on "The Management of Breast Tumors" and "Fractures About the Elbow," respectively.

At a meeting of the Chicago Laryngological and Otological Society, October 2, the speakers were Drs. Chevalier L. Jackson, Philadelphia, on "Surgical Treatment of Cancer of the Larynx" and Elmer W. Hagens, "Pathology of the Inner Ear in a Case of Deafness from Cerebro-Spinal Meningitis."

Dr. Samuel R. Meaker, professor of gynecology, Boston University School of Medicine, will deliver the eleventh annual William T. Belfield Memorial Lecture of the Chicago Urological Society at the Palmer House, October 26. His subject was "Male Infertility from a Gynecologic Viewpoint."

The Illinois Psychiatric Society was addressed October 5 by Max K. Horwitt, Ph.D., and Drs. Erich Liebert and George A. Wiltrakis, Elgin, Ill., on "Metabolism of the Brain Before and After Insulin and Metrazol Treatment as Determined by Oxygen and Carbon Dioxide Content of the Blood"; Maxwell Gitelson, "Concerning the Direct Psychotherapy of Children," and Jules H. Masserman, "Use of Phantasy Tests in Differential Psychiatric Diagnosis."

Dr. Parker Dooley, assistant professor of pediatrics, Cornell University Medical College, New York, has been appointed assistant professor of pediatrics in the School of Medicine of the Division of Biological Sciences, University of Chicago, it is announced. Dr. Francis B. Gordon, assistant profesor of bacteriology at the university, will return to the faculty this fall after a

year's study with Dr. Christopher H. Andrewes at the National Institute for Medical Research, London. Subjects of new courses at the university include forensic medicine, background study of human evolution and abnormalities of voice and speech.

News Notes

—The state department of health announces the establishment of four new district health units. There are now nineteen of these units offering full time service to ninety-six of the 102 counties in the state. The medical officers in charge of the new units are Drs. Abraham J. Levy, Gilman; Cecil A. Z. Sharp, Macomb; Clair L. Johns, Mount Sterling, and Jerome J. Sievers, Pana.

—Dr. Franz Alexander, director, Institute for Psychoanalysis, conducted the first of a series of five seminars for physicians on "Psychologic Problems in General Medical Practice," October 17. Other lecturers will be: Dr. Helen Vincent McLean, October 31, "Neurotic Gains from Illness"; Dr. Thomas M. French, November 14, "Psychologic Aspects of Asthma"; Dr. Leon J. Saul, November 28, "Psychologic Aspects of Hypertension"; Dr. Therese Benedek, December 12, "Premenstrual Emotional Difficulties."

—The clinical section of the Chicago Heart Association held its first meeting of the season at Michael Reese Hospital, October 27. Among the participants were Dr. Soma Weiss, professor of medicine, Harvard Medical School, Boston. Subsequent meetings of the section will be held monthly at one of the heart clinics of the city. Questions should be sent to Dr. Clayton J. Lundy, secretary of the clinical section, Chicago Heart Association, 203 North Wabash Avenue.

—Dr. Ludwig Teleky, formerly of Düsseldorf, Germany, has been appointed technical adviser to the division of occupational hygiene of the state department of public welfare, where he will be associated with Dr. Milton H. Kronenberg, chief of the division. Dr. Teleky graduated at the University of Vienna in 1896. He has served as honorary secretary of the Austrian Central Organization for Prevention of Tuberculosis and editor of its journal and as medical expert in the Workers Accident Insurance of Vienna and Lower Austria. In 1939 Dr. Teleky was awarded the Devoto prize of the Reale Institute Lombardo di Science and Letters in Milano for the best publication in industrial hygiene.

—Dr. George Otis Whitecotton, superintendent of the Stanford University Hospitals, San Francisco, for the last four years, has been appointed to the same position with the University of Chicago Clinics. Dr. Arthur C. Bachmeyer, director of the clinics and associate dean of the Division of Biological Sciences, has been acting as superintendent in addition to his other duties since the resignation of John C. Dinsmore in 1934. Dr. Whitecotton will manage Billings Hospital, Bobs Roberts Memorial Hospital for Children and the Max Epstein Clinic, while the supervision of Lying-In Hospital and the Home for Destitute Crippled Children will continue under other assistants to Dr. Bachmeyer. Dr. Whitecotton graduated at the Stanford University School of Medicine in 1933.

—A new program of postgraduate education has been adopted by the Illinois State Medical Society which will include several one-day conferences to be held in certain cities of the state. The first conference will be held at the Dunlap Hotel, Jacksonville, November 9, with the following program given by Chicago physicians: Dr. Robert S. Berghoff, "Heart Disease"; Dr. Warren H. Cole, "General Surgery"; Dr. Cleveland J. White, "Dermatology"; Dr. Philip H. Kreuscher, "Orthopedic Sugery"; Dr. Julius H. Hess, "Pediatrics"; Howard J. Shaughnessy, Ph.D., "Public Health"; Dr. James H. Hutton, "Endocrinology"; Dr. Frederick H. Falls, "Obstetrics." Each paper will be followed by discussions. Additional details may be obtained from Dr. Frank Garm Norbury, Jacksonville, or Dr. Berghoff, 30 North Michigan Avenue, Chicago.

—Under the direction of Samuel E. Munson, F.A.C.P., Governor of the American College of Physicians for Illinois, the fifth annual district meeting of the College of Physicians was held at the Norbury Sanatorium, Jacksonville, October 18. Luncheon was served by the Sanatorium at one o'clock to the members of the College, after which followed the scientific program of five papers, given by Fellows of the College—W. H. Newcomb, of Jacksonville, Gerald M. Cline, of Bloomington, Harold Swanberg, of Quincy, Thomas D. Masters, of Springfield, and John R. Vonachen, of Peoria. A joint meeting was held in the evening with the Morgan County

Medical Society at the Jacksonville Country Club, with a dinner at six o'clock; speaker, Dr. James H. Means, F.A.C.P., Jackson Professor of Clinical Medicine, Harvard Medical School, Chief of the Medical Service Massachusetts General Hospital, Past-President of the American College of Physicians—subject, "Thyroid Disease."

—St. Luke's Hospital, Chicago, Illinois, is shortly opening a neuro-psychiatric unit of twenty-five beds. This unit will be one of the first such units in a general hospital. This new division will afford modern treatment for all types of psychiatric and psychoneurotic conditions. Metrazol and insulin therapy, fever treatments, occupational therapy and other modern methods will be in charge of an especially qualified personnel. The new unit will also afford opportunity for psychiatric patients requiring general medical, surgical, or specialty services, to obtain same. The section will be under the general direction of Doctors George Hall, Francis Gerty, Roland Mackay, and the neuropsychiatric staff.

Deaths

WILLIAM ALBERT BERRY, Chicago; Rush Medical College, Chicago, 1903; aged 60; on the staff of St. Bernard's Hospital where he died, August 26, of angina pectoris.

EDWIN JASON BREWER, Shabbona, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; member of the Illinois State Medical Society; for many years mayor; aged 64; died, August 6.

MINNIE AGNES HINCH CONLEY, Wilmette, Ill.; Northwestern University Woman's Medical School, Chicago, 1901; aged 64; died August 31, of chronic myocarditis and arteriosclerosis.

WARNER LATTA CROUCH, Fairview, Ill.; Rush Medical College, Chicago, 1912; a Fellow, A.M.A.; served during the World War; aged 54; died, July 21, in the Graham Hospital, Canton, of uremia.

EDGAR AUGUST DEGENHARDT, Chicago; Chicago Medical School, 1921; a Fellow, A.M.A.; served during the World War; aged 43; died August 14, at his home in Oak Park, Ill., of coronary thrombosis.

TIMOTHY A. DALY, Chicago; Northwestern University Medical School, Chicago, 1897; a Fellow, A.M.A.; aged 65; died, August 16, of heart disease.

JAMES HARRY HAGAN, Lake Forest, Ill.; Drake University Medical Department, Des Moines, 1890; also a pharmacist; aged 76; died, August 27.

HENRY HERTEL, East St. Louis, Ill.; St. Louis Medical College, 1878; member of the Illinois State Medical Society; aged 89; died, August 22.

CARL FREDERICK C. KRAMER, Chicago; University of Illinois College of Medicine, Chicago, 1909; aged 66; for many years on the staff of the Belmont Hospital; died, August 6, of heart disease.

HARRY LAWRENCE RUBIN, Chicago; Loyola University School of Medicine, Chicago, 1922; aged 43; died, July 5, of rheumatic heart disease.

JANET LEAH LONG-MCCULLUM, Oak Park, Ill.; Illinois Medical College, Chicago, 1896; aged 79; died, July 30, of carcinoma of the uterus.

NICHOLAS BONIFACE PAUTLER, Waterloo, Ill.; Missouri Medical College, St. Louis, 1893; aged 67; died, July 18.

OSCAR BERNARD PAYNE, Chicago; Chicago Medical School, 1923; aged 50; died, July 3, in the Provident Hospital of pulmonary embolism from thrombophlebitis.

LENA KELLOGG SADLER, Chicago; American Medical Missionary College, Chicago, 1906; a Fellow, A.M.A.; fellow of the American College of Surgeons; past president of the Medical Women's National Association and the Chicago Council of Medical Women; attending gynecologist to the Columbus Hospital; attending surgeon to the Women and Children's Hospital; author of "How to Feed the Baby" published in 1925, author with Dr. W. S. Sadler "The Mother and Her Child" published in 1916 and "Psychiatric Nursing" published in 1937, and other books; aged 64; died, August 8, of carcinoma of the breast.

GEORGE W. SMITH, Peoria, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1887; aged 76; died, July 13, of pneumonia.

CHARLES DERASTUS THOMAS, Peoria, Ill.; Rush Medical College, Chicago, 1888; a Fellow, A.M.A.; fellow of the American College of Surgeons; on the staff of the Proctor Hospital; trustee of Bradley College; aged 75; died, July 18, of myocarditis.

EMIL GEORGE VRTIAK, Chicago; Rush Medical College, Chicago, 1920; a Fellow, A.M.A.; associate clinical professor of medicine at his alma mater; on the staff of the Lutheran Deaconess Home and Hospital; aged 48; died, August 7, in the Presbyterian Hospital of coronary thrombosis.

WILLIAM J. WICK, Chicago; Rush Medical College, Chicago, 1890; member of the Illinois State Medical Society; aged 72; died, July 29, of chronic myocarditis.

G. HOWARD WILSON, Dalton City, Ill.; National Normal University College of Medicine, Lebanon, Ohio, 1896; aged 67; died, August 31, of amyotrophic lateral sclerosis.

LOREN WILDER, Chicago; Rush Medical College, Chicago, 1901; a Fellow, A.M.A.; fellow of the American College of Surgeons; chief of the surgical staff of the Edgewater Hospital; aged 66; died, August 19, of cerebral hemorrhage and arteriosclerosis.

JOSEPH STERLING YOUNT, Chicago; Rush Medical College, Chicago, 1893; aged 72; died, July 17, in the Illinois Central Hospital.